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LAPORAN AKHIR PENYELIDIKAN

TAJUK PROJEK : Training Needs Analysis (TNA) Practices: A Survey of the Top 1000 Corporate Companies in Malaysia

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ABSTRACT

The literature of training strongly suggests that any training intervention must be preceded with the process of training needs analysis (TNA). This prerequisite step is considered important in providing organizations with valuable information to help them in designing strategic training programs. The manner to which TNA is approached is also important in determining the accuracy of its results. Existing literature on TNA shows that most studies on organizational TNA practices were done overseas. Due to various cultural and national differences, these findings may not reflect similar descriptions regarding TNA practiced in this country. With regard to these, this research was carried out with the purpose of understanding how organizations in Malaysia practice their TNAs. The research looked into many aspects such as nature of training needs commonly offered by organizations, individuals involved in selecting training participants, data collection methods and techniques used to perform TNA process, and also general perspectives regarding organizational TNA practices. Comparisons of TNA practices between organizations of different demographic backgrounds were also studied to see any differences in commitment towards TNA. Survey questionnaires were mailed to 278 companies listed in the top 1000 companies in Malaysia as in the directory of *Malaysia* 1000 (2003). Data was analyzed using various statistical methods including descriptive statistical techniques, Kruskall-Wallis, Mann-Whitney, Spearman and Pearson Correlations. Based on 30% rate of returns, results of the research showed that the top 1000 corporate companies' approaches to TNA were quite systematic and in accordance with the suggestions in the literature. However, their approaches may not be very sophisticated. The research found no significant differences in TNA practices of organizations of most demographic characteristics. However, companies of dissimilar nationality of parent companies were significantly different in terms of delivery of soft skill training, use of questionnaire and advisory committee as data collection methods, and use of competency analysis technique. The application of SWOT, competency analysis and managerial skills audit techniques were also different between organizations with and without a training unit. ISO certification of firms was found to correlate with the firms' use of performance appraisal method and critical incident technique, though the relationships for both were very weak. Relationships were found between firms' length of operations with two data collection methods namely SKAs tests (weak) and Delphi (very weak). Very weak relationships were also found between length of operations and application of several techniques like organizational scanning, task / KSA analysis, competency analysis, skills inventory, managerial skills audit, performance review, versatility chart / analysis and critical incident technique. Finally, in correspondence with previous research, the study found a relationship between size of firm and size of training budget although the correlation value was low.

ABSTRAK

Teori bidang latihan menegaskan bahawa setiap usaha latihan yang dibuat oleh organisasi mestilah didahului dengan proses Analisis Keperluan Latihan (TNA). Langkah ini dikatakan amat penting kerana ia membekalkan banyak maklumat berguna kepada organisasi di dalam memastikan setiap program latihan yang dijalankan adalah strategik. Melakukan proses TNA dengan betul juga adalah penting kerana ia mempengaruhi ketepatan maklumat keperluan yang diperolehi. Kebanyakan kajian mengenai TNA dijalankan di luar negara. Disebabkan perbezaan budaya dan konteks negara, penemuan kajian-kajian ini mungkin tidak tepat untuk menggambarkan praktis TNA di negara ini. Sehubungan dengan itu, kajian ini dijalankan dengan tujuan untuk memahami pendekatan organisasi di Malaysia di dalam melaksanakan proses TNA. Kajian ini melihat pelbagai aspek seperti jenis keperluan latihan yang lazim wujud di organisasi, individu yang terlibat di dalam pemilihan pekerja untuk menjalani sesuatu program latihan, kaedah pengumpulan data dan teknik yang digunakan untuk menganalisa keperluan latihan, serta pandangan keseluruhan terhadap kualiti pelaksanaan TNA di organisasi mereka. Perbezaan pendekatan TNA di antara organisasi yang berlainan latar belakang demografi juga dilihat dan ini bertujuan untuk mengetahui tahap komitmen mereka terhadap proses TNA. Soal selidik dihantar melalui pos kepada 278 organisasi yang tersenarai sebagai 1000 syarikat terunggul di Malaysia seperti yang dinyatakan di dalam direktori *Malaysia* 1000 tahun 2003. Data dianalisis menggunakan pelbagai teknik statistik termasuklah ujian statistik deskriptif, ujian perbandingan Kruskal-Wallis dan Mann-Whitney, serta analisis korelasi Spearman dan Pearson. Berdasarkan pulangan soal selidik sebanyak 30%, keputusan kajian menunjukkan bahawa pelaksanaan TNA organisasi di Malaysia adalah agak sistematik dan selaras dengan cadangan teori bidang latihan. Namun begitu, pendekatan yang mereka gunakan mungkin kurang sofistikated. Keputusan menunjukkan latar belakang organisasi tidak memberi sebarang perbezaan signifikan ke atas pelaksanaan TNA mereka. Walau bagaimanapun, organisasi induk memberi kesan yang signifikan ke atas penyampaian latihan *soft skill*, penggunaan kaedah soal selidik dan *advisory committee*, dan juga penggunaan teknik *competency analysis*. Penggunaan teknik analisis SWOT, analisis *competency*, dan *managerial skills audit* juga berbeza di antara organisasi yang mempunyai dan tidak mempunyai unit latihan. Perhubungan ditemui di antara pensijilan ISO organisasi dengan penggunaan kaedah penilaian prestasi dan teknik *critical incident*, namun begitu kadar perhubungannya adalah sangat lemah. Perhubungan juga dicatatkan di antara tempoh perniagaan organisasi dengan dua jenis kaedah pengumpulan data iaitu ujian SKAs (lemah) dan Delphi (sangat lemah). Perhubungan sangat lemah juga ditemui di antara usia perniagaan dengan penggunaan beberapa teknik TNA seperti *organizational scanning*, analisis *task / KSA*, analisis *competency, skills inventory, managerial skills audit, performance review, versatility chart/ analysis*, serta *critical incident technique*. Akhir sekali, selaras dengan penemuan kajian lepas, kajian ini juga menemui perhubungan di antara saiz organisasi dengan saiz bajet yang diperuntukkan untuk aktiviti latihan dan pembangunan. Walau bagaimanapun, kekuatan hubungan ini adalah lemah.

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LIST OF ABBREVIATIONS

A	Always
ASTD	American Society of Training and Development
CEOs	Chief Executive Officers
F	Frequent
HRD	Human Resource Development
KSAs	Knowledge, Skills and Abilities
N	Never
NGOs	Non-Governmental Organizations
O-T-P Approach	Organization-Task-Person Approach
R	Rare
S	Seldom
SKAs	Skills, Knowledge and Abilities
SWOT Analysis	Strengths, Weaknesses, Opportunities and Threats Analysis
TNA	Training Needs Analysis

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CHAPTER 1
RESEARCH PERSPECTIVES

1.1 Introduction

Employees are said to be the most valuable assets in an organization, and that an organization is only as good as its people. Only through them can organizations achieve their objectives. It is therefore important that employees possess the necessary skills, knowledge and abilities (SKAs) in order that organizations achieve their goals and remain competitive and successful.

A formal approach for organizations to update employees' acquisition of job-related SKAs is by training. From a human capital theory perspective, training is investment rather than consumption. Research claimed that training is an important factor that could facilitate a firm's expansion, develop its potentials and enhance its profitability (Cosh, *et al*, 1998). Tung-Chun (2001) also agreed that educated and well-trained employees are a prerequisite for an organization's competitive advantage.

In order for organizations to enjoy the returns on training investment, the training itself must first be approached systematically. Systematic means that there are certain steps that organizations need to take in training and developing their employees. These steps begin with an identification of training needs, designing and developing an appropriate training to serve the needs, implementing the training according to plan, and evaluating the training program to determine whether the original needs have been achieved. These steps are more

popularly known as the 'training cycle' and a lot of training scholars agree that these steps are necessary to ensure training effectiveness (eg. Blanchard and Thacker, 2003; Goldstein and Ford, 2002; and Noe, 2005).

Among the steps in the training cycle, training needs analysis (TNA) can be considered the most important phase in ensuring the effectiveness of the planned training. This statement is made based on the heavy emphasis placed by many training theorists on this phase, who agree that TNA must precede any type of training intervention (eg. Goldstein and Ford, 2002; Salas and Canon-Bowers, 2001; Palmer, 1999; Taylor and O'Driscoll, 1998; Reid and Barrington, 1997; Nelson *et al*, 1995; Reay, 1994; O'Driscoll and Taylor, 1992; Wright and Geroy, 1992; Ostroff and Ford, 1989; Boydell, 1976; and McGehee and Thayer, 1961). This opinion may be attributed to the fact that TNA not only ensures that investments in training by organizations pays, but also as the first stage in the training cycle, minimizes errors possibly made in the training programs (Elbadri, 2001). Tung-Chun (2001) further emphasized the significance of this step, stating that there is a considerable relationship between TNA and training effectiveness.

1.2 Background

Several definitions were offered to describe training needs analysis. The most quoted definition is the one offered by Goldstein (1993, in Salas and Canon-Bowers, 2001), who defined TNA as a process conducted to answer three training-related questions of which are: where is training required, what is to be taught in training, and who should attend the training. Answers to these questions provide important information in ensuring that the training provided actually helps organizations maximize the potential of their workforce.

Training employees effectively is not easy. There are several factors that human resource developers must consider when designing a training program. These factors will determine whether transfer of training actually occurs. It is true that an effective TNA alone will not guarantee that transfer of training occurs or that objectives are achieved. However, one of the conditions that would make a training transfer possible is how the training is approached at the beginning. This involves careful consideration regarding the accuracy of

the identified 'needs' and the best way to fulfill those 'needs'. If the 'needs' are accurately identified, the probability of success of the training is increased.

There are two basic issues of concern regarding TNA. The first is whether it is conducted before training is implemented. The second is the manner in which it is conducted. Both issues are concerns and both are widely reported in literature. Literature shows that organizations tend to offer training without prior analysis of their needs. This became a problem because of the importance of the TNA step in providing useful information to ensure training effectiveness. There is also a lot of evidence in the literature regarding the atheoretical, informal and unsystematic practice of TNA in organizations (Mahler and Monroe 1952 in Moore and Dutton, 1978; Erffmeyer *et al,* 1991; Amos-Wilson, 1996; Agnaia, 1996; and Elbadri, 2001). Even if organizations claimed they conducted needs analysis, the results of these analyses which they used as guidance in planning their training programs would not be useful if they did not approach them properly. According to one author:

> *"inadequate needs assessment can result in inappropriate and ineffectual interventions which could either have no impact or have a deleterious impact on the actual performance problem."*
>
> (Wagonhurst, 2002:78)

Both concerns of training implemented without prior TNA, and atheoretical / informal TNA affect two parties: theorists and practitioners. Theorists, mostly from the academic field, supply the theories or models on how to perform TNA so that organizations can maximize the potential of their workforce. Practitioners are the ones who decide whether the theories are actually useful in practice. As a theory that belongs in an applied field, the credibility of TNA is largely dependent on whether it is useful in practice. If these theories are not practiced, it is a waste to both parties. For theorists, their work only appears on paper. But for practitioners, they might be practicing incorrect or ineffective approaches to training which could hinder their organizations competitive performance.

1.3 Problem Statement

The environment in which businesses operate today has changed dramatically compared to a few decades ago. The advancement of technology has forced companies to keep up in order to remain in business. More companies are beginning to realize that one of the ways to ensure their business remains competitive is by constantly increasing the value of their workforce by updating their skills and knowledge. In order to do this, businesses should not only react when problems occur. Rather, they should be more proactive, think of what they must possess in the future and be prepared well before their competitors. These demands have created two types of training needs: reactive and proactive. Fulfilling both types of needs are important in order for organizations to stay successful and there are several TNA approaches / models to enable them to analyze their needs accurately.

In theory, TNA need to be approached systematically and formally by following certain steps. Needs at organizational level should first be analyzed, followed by operational (job) and individual analysis. Needs at each level can be identified by carrying out certain techniques such as the Balanced Scorecard (organizational level), task analysis (operational level) and performance review (individual level). Various TNA models exist to help practitioners carry out their TNA. A more comprehensive model was the one developed by Goldstein and Ford (2002) that consists of a five-level needs assessment process. A less comprehensive model targeted towards practitioners / trainers is one by Reay (1994).

As highlighted earlier, many organizations fail to acknowledge the importance of the TNA step in their training interventions (Mahler and Monroe 1952 in Moore and Dutton, 1978; Erffmeyer *et al*, 1991; Amos-Wilson, 1996; Agnaia, 1996; and Elbadri, 2001). They spend money on training without proper analysis of how such training could help their strategic needs. There was also evidence that training conducted in organizations was often not strategic, as the training needs were not properly assessed to determine how such needs contributed to the overall strategic objectives of the organizations (Amos-Wilson, 1996; and O'Driscoll and Taylor, 1992).

One of the reasons that might explain the above attitude is the lack of experience and knowledge practitioners had regarding how to conduct TNA. Zakaria and Rozhan (1993) reported that the majority of organizations they surveyed that did not conduct TNA stated lack of expertise as the main reason. A look at a few models of needs analysis shows that individuals who want to perform TNA based on these models need to have the necessary skills, knowledge and expertise in order to carry out the various analysis levels effectively (Wagonhurst, 2002). Unfortunately, it is not uncommon for individuals without the proper / relevant qualification to be put in charge of training and developing organizational workforces. Individuals considered to be competent in the field of training by virtue of their qualification background need to continuously update their knowledge to avoid being guided by outmoded TNA theories (Dubin, 1976).

There are two possible causes of performance problems. One is employees' lack of SKAs. The other involves contextual factors in organizations such as inadequacy of equipment and poor reward systems. In theory, only employees who are deficient in their SKAs and whose performances are affected because of this deficiency are qualified to be sent for training. This rule is in line with the definition of training itself, herein described as the: *"systematic process of providing an opportunity to learn KSAs for current and future jobs"* (Blanchard and Thacker, 2003:10). Trying to train employees whose performance problems are not caused by SKA deficiencies is therefore, a big mistake.

Unfortunately, in practice, organizations tend to solve all types of performance problems by training without prior analysis of what causes the problems, which employees' performances are affected and what kinds of training interventions would provide the best solution. Sending the wrong employees to training could create problems later when trying to justify the benefits of training if there is no positive change to a participant's performance. Selection of training participants which can be done by conducting a thorough TNA is therefore important so that only employees who really need training are given it.

There are plenty of data collection methods and techniques available to analyze training needs. For example, in 1977 Moore and Dutton compiled more than 30 sources of data and techniques to analyze training needs, and categorized these into the three levels of

analysis. Over the years, progress has been made, with more methods and techniques invented and old ones improved to produce better methods of analysis.

In practice however, the methods / techniques that organizations use in TNA are very limited. Literature suggests that the most common approach to TNA is by looking at performance appraisal records of employees (Agnaia, 1996). Relying solely on this method to pinpoint employees' training needs is problematic due to its various flaws as widely acknowledged in literature (eg. Herbert and Doverspike, 1990).

In theory, multiple methods should be adopted to get a more accurate picture of training needs. This may involve gathering data from different individuals to provide different perspectives of a particular problem / need. Referring to only a single source of data or relying on one method may provide inaccurate or totally erroneous results. Therefore, it is important that choice of methods and techniques be properly considered.

Every organization that considers training as an investment expects returns. In order for this to occur, therefore, approaching the training systematically by starting it with an organized TNA should be a concern to any organization of any character. According to literature, level of commitment towards training in general is influenced by company size (Westhead and Storey, 1997 in Tung-Chun, 2001), type of industry (Elbadri, 2001), and nationality of parent company (Wan Aziz, 1994). In sum it could be said that the demographic details of firms have some bearing on their overall approach to training, including TNA.

Previous research related to TNA tended to explore the overall training practices of organizations which included all the four main phases in the training cycle, namely training needs analysis, design of training, implementation of training, and evaluation of training (eg. Poon and Rozhan, 2000; Gray *et al*, 1997; Elbadri, 2001; etc.). These researchers aimed to answer questions such as whether prior needs analyses were conducted, what training methods were commonly used in organizations, and whether such training was evaluated. Although sufficiently comprehensive to explain overall training practices, findings from such research could only be used to provide general information regarding TNA practices such as

whether or not TNA was practiced, but not how it was practiced. Such findings have limitations because even though organizations claim they conduct some form of needs analysis, their approaches may not be right. There is, therefore, a need to find out not only whether organizations conduct analysis, but also how they conduct them and whether or not these are in line with TNA theories.

Existing literature on TNA shows that most studies were done overseas. Due to various cultural and national differences, findings from these studies may not reflect similar descriptions regarding TNA practiced in Malaysian organizations. There were quite similar studies conducted in Malaysia (for example Poon and Rozhan, 2000; Rozhan, 1998; and Zakaria and Rozhan, 1993). However, the scopes of these researches were not specific to TNA and thus there is a limitation to the findings as described in the earlier paragraph. The companies studied by those researchers were also limited to a few sectors (eg. manufacturing and service sectors). This finding therefore, may not be accurate to describe TNA practices of organizations in other sectors.

1.4 Objectives

Based on explanations in the earlier section, there was a need to study how Malaysian organizations in general approached their TNA. A research was carried out to achieve this purpose. The study started by finding out the knowledge background of training practitioners in training and development. The study then, determined the types of TNA that the organizations normally conducted. The major part of the study focused on how training decisions were made in organizations in terms of who decided what trainings were needed and which employees to go for training. The study also looked at techniques used in organizations to determine training needs as well as answer the question of whether the tripartite TNA framework, as suggested in the literature, was practiced. Methods that organizations used to collect data for TNA exercises were also researched. The overall perceptions of practitioners regarding TNA practiced in their organizations were obtained in order to know whether such practices were similar to espoused theories. Comparisons of TNA practices between companies of selected demographic factors were analyzed to make out differences in commitment towards TNA. The study also examined whether certain

variables like ISO certification of firms, length of operations and size of firms had any influence on their overall TNA practices. Finally, these findings were used as a basis to answer the question of whether formal and theoretical TNA is applied in organizations, and if not, to propose relevant recommendations to bridge gap between the theory and practice of TNA. These questions are translated into the following objectives:

1. To identify the nature of training needs commonly offered by the organizations.
2. To determine the means by which participants were selected for training.
3. To identify data collection methods and techniques used in the TNA process.
4. To determine levels of perception regarding organizational TNA practices.
5. To compare TNA practices with the organizational demographic characteristics.
6. To determine relationships between data collection methods and techniques used to perform TNA with the ISO certification and length of operation of organizations.
7. To discover the relationship between company size and size of training budget.

1.5 Scope

The study concentrated only on the TNA stage of the training cycle / process and did not look into other phases such as design, implementation or evaluation of training. Aspects of TNA examined in the study were: reasons for conducting TNA, selection procedures used to select potential training participants, methods used to collect data, techniques to analyze training needs at all three levels of analysis, and respondents' perceptions towards their organizations' overall TNA practices. All these factors were analyzed to indicate systematic or unsystematic TNA practices.

The focus of the study centered around organizations listed in the directory of *Malaysia 1000* (2003). These companies were considered the top 1000 performing companies in Malaysia in the year 2003. They involved those from various demographic characteristics such as sectors, sizes, locations, parent companies, etc. Further reasons as to why this group was chosen is described in Chapter 4.

1.6 Limitations

Samples of the study comprised individuals in charge of training / TNA functions in their respective organizations. To enhance data accuracy, the respondents were asked to answer the questions based on their past practices and this emphasis was also reflected in every sentence structure in the questionnaire. Some might consider this information a self-report data by a single person to represent the whole organizational TNA practice and therefore, doubt its truth. Although all necessary precautions were taken to ensure provision of accurate data, such a possibility is not unusual. For that reason, the data obtained from these individuals may need to be treated with caution as they might be subject to much personal perception and opinion.

The study only employed a single method for data collection, through questionnaires. As acknowledged in the literature, this instrument has several limitations including difficulty to control return rate and lack of richness of data. However, due to budget and time constraints, this method was still chosen as the most practical and economical. Nevertheless, several measures were taken to minimize these limitations. First, in order to encourage respondents to fill in and return the questionnaires, each respondent was given a complimentary gift and invited to participate in a lucky draw contest to win an attractive prize. However, whether or not the respondents would actually participate in the study was difficult to control. Therefore, results of the research largely depended on their willingness to participate in the study. Second, a considerable thought and care was given when designing and structuring the questions / items in the questionnaires to ensure that the data collected would be adequate to answer the study's objectives.

1.7 Definitions

A number of key terms were used in the study which appeared throughout this dissertation. The terms are defined below.

1.7.1 Atheoretical

"... no thorough scholarly or scientific basis for the ideas and products being promoted"

(Swanson, 2001:301).

1.7.2 Practice

Actions applied by human resource practitioners in organizations as opposed to theory.

1.7.3 Theory

"A theory tries to make sense out of the observable world by ordering the relationships among elements that constitute the theorist's focus of attention in the real world" (Dubin, 1976:26).

or,

"... a fundamental set of propositions about how the world works, which has been subject to repeated tests and in which we have gained some confidence" (Senge *et al,* 1994 in Lynham, 2000:160).

1.7.4 Training

"A planned process to modify attitude, knowledge or skill behaviour through learning experience to achieve effective performance in an activity or range of activities. Its purpose, in the work situation, is to develop the abilities of the individual and to satisfy the current and future needs of the organization" (Manpower Services Commission, 1981:62 in Wilson, 1999:4).

1.7.5 Training Needs Analysis

A process to *"...determine where training is needed, what needs to be taught and who needs to be trained"* (Goldstein, 1993 in Salas and Canon-Bowers, 2001: 475).

or,

"An ongoing process of gathering data to determine what training needs exist so that training can be developed to help the organization accomplish its objectives" (Brown, 2002: 565).

CHAPTER 2
THE THEORIES OF TRAINING NEEDS ANALYSIS

2.1 Introduction

The focus of this chapter is to explain the theories of training needs analysis. Concepts, objectives, roles, and frameworks of training needs analysis will be explored and discussed in details. Methods, sources of data and techniques involved in performing the analysis will also be presented.

2.2 The Concept of Training Needs Analysis

There are a few terms that can be used to refer to the process of identification of training needs. The most common terms are either training needs analysis (TNA) or training needs assessment. Although both terms are often used interchangeably and many writers regard them as similar, Kaufmann, *et al* (1993) considered them as different. According to them, the purposes of needs assessment were three-fold - to identify performance gaps, to prioritize them and to address the most important ones. Needs analysis, on the other hand, was the process adopted to investigate the reasons for the gaps (ibid. in Holton, *et al,* 2000).

Other authors (for example, Craig (1994)) preferred the word 'learning' as opposed to 'training'. He thought 'learning needs analysis' was more appropriate considering the changes taking place in the working environment like changes in the meaning of 'organization' and 'working', the pre-determined training solution to the problem / need, the

concept of home-based working and the shift of responsibilities of SKAs development from employers to employees.

Although there are many labels, all of them actually refer to a systematic effort with which data is gathered to analyze performance problems in order to decide whether they could be potentially solved by training activities (Chiu, *et al,* 1999). For the purpose of this study, the term Training Needs Analysis (TNA) is chosen because it is considered the more commonly known term and easily understood by training practitioners in organizations.

Reasons for conducting training needs arise from the internal and external factors of an organization. Examples of internal factors that initiate training needs are, new or altered organizational objectives, new equipment, new employees, performance deficiencies, new jobs, etc. Instances of training needs caused by external factors are government legislation, technological changes, higher competition caused by business rivals, etc. These factors create new requirements for organizations, and these needs must be fulfilled if they want to compete successfully in business.

2.3 The Role of TNA and Training Effectiveness

The four-step process typically involved in the design of any training programme is known as a training cycle. The following diagram maps the process.

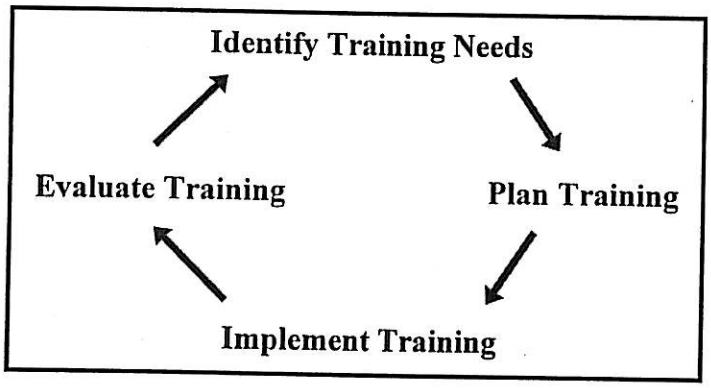


Figure 1: The Training Cycle (Balderson, 1999:28)

The cycle begins with an identification of training needs. The outcome of this step could result in either training or non-training solutions. If the 'needs' can be satisfied only through training, then the process moves to Step Two where particular training to fulfill the needs is planned. Several items to consider in this step are, the objectives of the training, the contents of the training, the mode of training, the trainer, and etc. Step Three is when the planned training is finally implemented. Then results of the training are evaluated to find out whether the original 'needs' identified in Step One have been satisfied and that the objectives of the training preset in Step Two have been achieved.

Earlier in Chapter 1, it was stated that most books on training stressed the importance of TNA in planning and designing of any training program (for eg. Goldstein and Ford, 2002; Palmer, 1999; Reid and Barrington, 1997; Reay, 1994; Boydell, 1976; and McGehee and Thayer, 1961). This opinion is probably due to the useful information that TNA provides to guide the planning and implementation of training programs. TNA serves various purposes as below:

2.3.1 TNA ensures that a particular 'need' or problem can actually be achieved by providing training.

TNA allows a thorough analysis of a problem / need and determines whether such problems / needs can actually be solved by training (Brown, 2002). As mentioned in Chapter 1, not all performance deficiencies can be treated by training. Employees sometimes do not perform not because they do not possess the necessary SKAs, but because of other reasons such as faulty equipment, poor systems, inadequate facilities, improper rewards or punishment systems implemented in the organizations. Training can solve employees' performance problems only if the problems are due to the employees' lack of SKAs.

One method to know whether performance problems can potentially be treated by training is by conducting Trainability Analysis (Ibrahim, 1996). It is a method that involves calculations of training risks if a training solution is offered to treat a performance problem. Trainability Analysis is recommended to be performed

before conducting the actual TNA. The rationale of conducting the analysis is simple. It saves practitioners' time and effort by concentrating only on problems that can be solved by training. It also helps to minimize failure of training programs (ibid.). Nevertheless, performing the analysis accurately is no easy task. The analysts need to be well-versed and experienced in the field and have access to background information regarding a problem. This is because the success of the analysis depends largely on the analysts' capability to judge a performance problem.

2.3.2 TNA ensures strategic training.

Overall definitions of TNA offered by many authors indicate clearly that TNA is done so that training developed by organizations will enable them to achieve their strategic objectives. The definition by Ferdinand (1988) states that TNA is a *"rational process by which an organization determines how to develop or acquire the human skills it needs in order to achieve its business objectives"* (in Chiu, *et al*, 1999). Another author, Brown (2002) defined training needs assessment as *"an ongoing process of gathering data to determine what training needs exist so that training can be developed to help the organization accomplish its objectives"* (p. 565). Both definitions obviously show that the purpose of TNA is to ensure that objectives of each training are aligned with the ultimate objectives of the sponsoring organizations.

Daniels (2003) claimed that a lot of organizations' investments in training failed to return and suggested that this was probably due to the organizations' failure to connect training efforts with their goals and strategies. Mistakes such as this could have been minimized if training practitioners were aware of the importance of TNA. TNA, if done properly, will force practitioners to determine the potential contribution of every training program to the achievement of organizational objectives. If practitioners failed to see the linkage, it could mean that the trainings were actually based on 'wants' rather than true 'needs'. Some organizations are even unsure of their own mission and this would affect their whole business operation, including training and developing their workforce. If TNA was conducted, practitioners would be forced to specify the organization's ultimate objectives. Only

after this was predetermined, could all training efforts be put to work towards the objectives.

The strategic nature of TNA can also be based on the way in which the famous tripartite-level of TNA is structured. In order for training to be able to contribute to the achievement of organizational objectives, TNA must first examine the context of the organization, and this is known as Organizational Analysis. In the first level of analysis, needs analysts will have to examine all components of the organization. The three steps involved in this level include specification of goals, determination of training climate and identification of external and legal constraints that would affect training efforts (Goldstein and Ford, 2002). Only after this level is analyzed can the other two levels (job analysis and individual analysis) be conducted. In other words, organizational analysis provides a guide to determining what training is needed and to whom it should be offered to enable the organization to achieve its objectives. Training conducted without the precedence of TNA would probably lack strategic values. The three-level TNA analyses will be explained in depth in later sections.

2.3.3 TNA determines the 'where', 'what' and 'who' decisions of training.

According to Goldstein (1993) a TNA is conducted to "... *determine where training is needed, what needs to be taught and who needs to be trained*" (Goldstein, 1993 in Salas and Canon-Bowers, 2001:475). Information regarding these three questions is important in designing an effective training program. 'Where' is identified at organizational analysis. It is not uncommon in organizations to offset training to employees who do not need it. The implication of teaching SKAs to participants who are not interested or find no relation to their job could affect their learning motivation. Therefore, the role of TNA is to ensure that only the right training is provided to the right employees since training that is perceived to be relevant is more likely to create interest (Blanchard and Thacker, 2004). TNA also enables program developers to create a program that is suitable to the target participants' learning needs, learning style and job level.

2.3.4 It provides a benchmark for evaluating training and records the justification of training budget.

Training is considered successful if it achieves its objectives. In order to do this, these objectives must be determined in advance during the TNA stage. These objectives will provide a basis for evaluating the effectiveness of the training program. TNA ensures the possibility of evaluation by requiring analysts to decide what the training program intends to achieve. Analysts should also ensure that the objectives set in the TNA stage are specific, measurable, attainable, reasonable and to be achieved within a certain timeframe. Evaluation of the training would be easier if such objectives fulfilled the five criteria stated.

Business environments today are characterized by rapid and unpredictable changes. This has forced organizations to be flexible in order to remain competitive. Within such a context, the human resource function is believed to play a more important role in helping in the survival of organizations through their employees (Gascó, *et al*, 2004).

Previously, the human resource function was often the first department to be sacrificed whenever organizations faced financial difficulties (Wagonhurst, 2002). This was probably due to the failure of human resource practitioners to prove their importance in the operations of organizations. Another reason may be the intangible and un-immediate effect of training benefits to organizations.

The above case presents new challenges to human resource practitioners. Besides helping organizations achieve their objectives, they should also be able to clearly show how their work contributes to organizational earnings (Fonda and Buckton, 1995; Ulrich, 1997 in Gascó, *et al*, 2004). Therefore, the capability of training departments to demonstrate the benefits of training to organizations as well as to employees is vital. Failed training programs would no doubt affect the future approvals of training budget.

2.3.5 To maximize the possibility of training transfer.

The process of TNA does not only involve making decisions regarding what type of training is needed by which employees, but also involves other related aspects of the training to increase the possibility of SKAs learned in the training to be applied back into participants' job (Noe, 2005). For example, Goldstein and Ford in their TNA model proposed that measures such as establishing relationships with top management as well as the staff was very important and had to be done before analysts commenced the TNA process. Furthermore, the climate of an organization needs to be analyzed to ensure that employees can successfully apply the SKAs they gain from a training program.

2.4 Reactive vs. Proactive TNA

The traditional and common way of looking at training needs is by focusing on a performance discrepancy between employees' current performance and expected performance. Referred as the reactive approach, it means that training is applied as the solution only when there is gap in meeting current standards of performance. This view can be translated into the following equation:

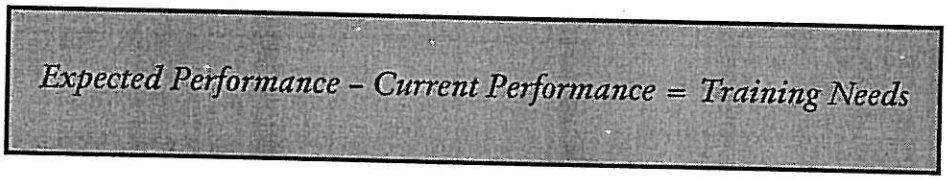


Figure 2: Training Needs Equation (Wright and Geroy, 1992)

This approach has received much criticism for its failure to link training needs of employees with organizational strategic objectives (for example, Taylor and O'Driscoll 1998). The nature of organizations, reacting only when performance gaps grow, or focusing only on present needs is no longer suitable in a rapidly changing business environment. Future needs and requirements, which must be fulfilled to maintain organizational survival and competitiveness, are not taken into consideration. Clardy (1997) also stated that such approaches did not clearly indicate the definition of 'need' and failed to consider other

factors instead of employee's SKAs, such as poor systems, equipment, etc. that might have caused discrepancies in performance. Anderson (1994) further supported this view stating that the traditional approach to TNA was very expensive to implement and time-consuming. According to him, by the time the identified needs were translated into a training program and delivered to the employees in need, the scope of needs and contents of the training were already outdated (ibid.).

Due to these weaknesses, therefore, a newer version of the TNA model, which is more proactive, has gained in popularity in recent years (Wright and Geroy, 1992). Some examples are Berger's (1993) future-oriented TNA and Anderson's (1994) proactive model of needs analysis. For instance, Berger (1993) wrote about a TNA approach which he called the 'market-led TNA' and claimed it to be more suitable to the changes in the environment of organizations. The model started with an examination of business environment where key senior managers of an organization were asked to judge their company's environmental stability / turbulence based on their environment five years ago, the environment at present, and the environment five years in the future. This first step required a lot of participation and cooperation from key senior managers in order to determine the organization's position. They were then asked to list various elements that made up the organization (such as its culture, value, structure, procedures, etc.) and evaluate them in terms of what the organization's current practice was and what changes they would like to see to increase the organization's effectiveness. The final step deals with the determination of the SKAs needed to realize the necessary changes. Berger (1993) claimed that his approach was better than the traditional approach to TNA because it was simpler and easier to implement, it showed how changes at sub-units contributed to the overall changes of the whole organization, and lastly this model yielded needs that were more responsive and future-oriented.

2.5 Frameworks of TNA

In order to design training programmes which satisfy both organization and human assets, the training programmes must be based on organizational, operational and individual analyses together with the use of appropriate techniques to collect data from all three levels (Boydell, 1979 and Stanley, 1987; in Agnaia, 1996). One of the earliest and most classical

works to influence TNA and in fact the fields of training and development was written by McGehee and Thayer (1961) (Goldstein, 1989). In their opinion, TNA was a research that had to be conducted in a systematic and continuous manner, and they rejected the use of any intuitive top management approaches in determining training needs. McGehee and Thayer introduced the tripartite levels of the TNA framework and this framework has been a great influence to other subsequent models of TNA. The three levels are described as follows:

2.5.1 Organizational Analysis

According to McGehee and Thayer, organizational analysis involved determining where within an organization training emphases could and should be placed. In order to do this, organizational objectives, human resources, efficiency indices and climate were analyzed. According to Noe (2005), organizational analysis also involves the consideration of strategic company directions; of whether managers, peers and employees support training activity; of what training resources (budget, time, expertise for training) are available.

2.5.2 Operational Analysis

McGehee and Thayer's operation analysis involved determining what the contents of training should be in order for an employee to perform a task, job, or assignment in an effective way. Operational analysis is sometimes also known as job or task analysis.

2.5.3 Individual Analysis

The SKAs required from an employee to perform a job are determined in this level. This level is now more popularly known as individual or person analysis. However, McGehee and Thayer used the word 'man analysis' when they first proposed the idea and broke this level into two types of analyses: summary man analysis and diagnostic man analysis. The former attempted to identify how well

employees performed their jobs, while the latter, the levels of skills, knowledge and attitudes involved in performing a job.

McGehee and Thayer proposed that all three levels were interrelated and organizational objectives served as an overarching umbrella cascading down to the lower levels. Their contributions were quite significant and their omnipresent tripartite levels served as a foundation for the theoretical development of subsequent TNA models very much referred to by later authors in the field (eg. Moore and Dutton, 1978; Ostroff and Ford, 1989; and Taylor and O'Driscoll, 1998).

Continuous efforts have been made to improve existing frameworks. One example is by Ostroff and Ford in 1989. They elaborated the tripartite levels of TNA and developed a 27-cell TNA model based on three perspective levels of 'training content' (O-T-P), 'organizational levels' (organizational, subunit and individual) and 'application levels' (conceptual, operational and interpretational). Information contained in each of these cells is claimed to be interrelated, and needs to be assessed together to produce a comprehensive TNA. Another level of analysis focusing on group needs was also added through the years in line with the growing emphasis of teamwork in the workplace. Some authors (for eg. Chiu, *et al,* 1999; Daniels, 2003) believed that employees working in teams require different training needs as compared to individuals working alone.

TNA models have also developed in recent years in terms of their coverage, purposes and targeted users. Leigh, *et al* (2000) compiled various models and categorized them under different levels of scope - mega (society), macro (organization), micro (individual / group), process (efforts and activities), and input (resources). There are also models to determine national-level TNA, which serve as a standard model and used by countries of the same continent (eg. Vengroff, 1990). There is also a TNA model specifically developed for a company responsible for the management of other companies' employee training and development (Al-Khayyat, 1998). In this case the clients are usually of the same industry, occasionally grouping together to minimize the costs of employee training and development.

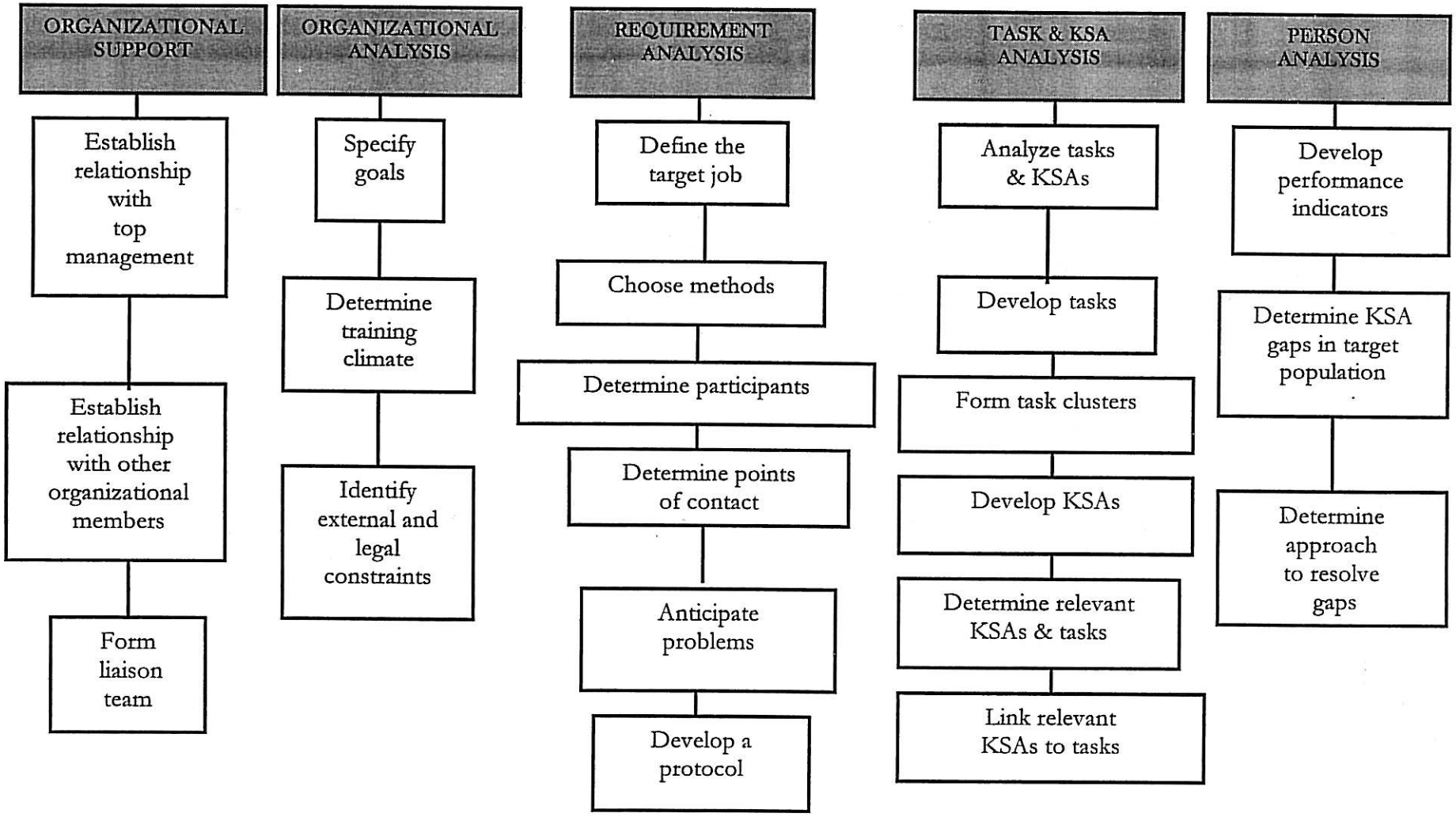
2.6 Models of TNA

There are many models on how to conduct TNA found in the literature. Leigh, *et al* (2000) acknowledged that dozens of needs assessment models have existed in the literature for the past three decades and each differs in terms of its levels of concentration. In general, TNA models can be grouped into two major categories: the organization-task-person analysis (O-T-P) approach and the performance analysis approach (Taylor and O'Driscoll, 1998). The former is more popular among academicians, and many models developed by them are based on this foundation. The latter is popular among practitioners, and gaps between expected and current performance are considered as needs for training. Compared to the performance analysis approach, the O-T-P approach tends to be more strategic to organizational missions and needs for the future are also analyzed as part of analysis (ibid.).

Two models based on both approaches will be discussed in detail in this writing. They are models by Goldstein and Ford (2002) and by Wright and Geroy (1992). The former model is selected because it is felt that it is the most comprehensive as it adds preliminary steps in the TNA process in addition to the common three levels of analyses. The latter is chosen because it is felt that it emphases the importance of overall organizational strategy, philosophy and culture and embeds these elements in organizational TNA decisions.

The following is a further detailed explanation of the model of training needs assessment as suggested by Goldstein and Ford (2002). This model is thought to be the most comprehensive as it takes into consideration the steps for preparation that analysts must take in order for TNA exercise to be successful. The following diagram (Figure 3) maps the process:

Figure 3: Model of the Needs Assessment Process (Goldstein and Ford, 2002: 35)



2.6.1 Goldstein and Ford's Model of the Needs Assessment Process

The model involves five levels of analysis, namely Organizational Support, Organizational Analysis, Requirement Analysis, Task and SKAs Analysis and Person Analysis. Three of the five levels are present in other TNA models. However, this model is different in terms of its emphasis on the importance of preliminary preparations that needs analysts should take in order for the TNA to be conducted successfully. This is shown by the first level of the model where the needs analysts must gain organizational support, which involves establishing relationships with top management, organizational members and forming a liaison team to facilitate the whole process of TNA. At the second level, similar to other models, the needs analysts have to understand the strategic direction of the organization and align training needs to organizational needs. Here the needs analysts must also examine all components of the organization, not only its goals, but also its resources, transfer for training climate, internal and external constraints present in the organization that might affect training programs. As the conducting of task / SKA analysis and person analysis can be quite difficult and complicated, Goldstein and Ford stressed the critical importance of good preparation before actually starting off to the next levels. In Requirement analysis, they proposed a series of detailed steps that analysts should take to prepare for the next levels. These include defining the target job and understanding how it fits in the organizational context, choosing the most suitable method to collect data in the two levels, determining those who have the data and how their participation can be obtained, determining points of contact in the organization to ease data collection, anticipating problems to be resolved and developing a standard protocol to be followed in collecting the data. Goldstein and Ford's explanations regarding how the other two levels of analysis can be conducted are quite similar to other TNA models, therefore elaboration on these are discussed in other sections of this chapter.

2.7 Sources of Data in TNA

Various sources of data can be referred as indicators of training needs. In 1977, Moore and Dutton produced an article accumulating numerous TNA data sources. They

categorized these sources according to the tripartite-level of analysis. Some of these sources are shown in the following table.

Data Sources Recommended	Training Need Implications
Organizational Level	
1. Organizational Goals and Objectives	Where training emphasis can and should be placed. These provide normative standards of both direction and expected impact which can highlight deviations from objectives and performance problems.
2. Manpower / Labor Inventory	Where training is needed to fill gaps caused by retirement, turnover, age, etc. This provides an important demographic data base regarding possible scope of training needs.
3. Skills Inventory	Number of employees in each skill group, knowledge and skill levels, training time per job, etc. This provides an estimate of the magnitude of specific training needs. Useful in cost benefit analysis of training projects.
4. Organizational Climate Indices (examples: labor-management data, grievances, turnover, absenteeism, suggestions, productivity, accidents, short-term sickness, observation of employee behavior, attitude surveys, and customer complaints)	These 'quality of working life' indicators at the organization level may help focus on problems that have training components.
5. Analysis of Efficiency Indices (examples: costs of labor, costs of materials, quality of product, late deliveries, and repairs)	Cost accounting concepts may represent ratio between actual performance and desired or standard performance.
6. Changes in System or Sub-system	New or changed equipment may present training problem.
7. Management Requests or Management Interrogation	One of the most common techniques of training needs determination.

Table 1: Sources of TNA Data (Moore and Dutton, 1978: 532 – 45).

Data Sources Recommended	Training Need Implications
Operational Level	
1. Job Descriptions	Outlines the job's typical duties and responsibilities but not meant to be all-inclusive. Helps define performance discrepancies.
2. Job Specifications	Lists specified tasks required for each job. More specific than job descriptions. Specifications may extend to judgments of knowledge and skills required of job incumbents.
3. Performance Standards	Objectives of the tasks of job and standards by which they are judged, and may include baseline data as well.
4. Review Literature Concerning Job (examples: research in other industries, professional journals, documents, government sources, PhD theses).	Possibly useful in comparison analyses of job structures but far removed from either unique aspects of the job structure within any specific organization or specific performance requirements.
Individual Level	
1. Performance Data or Appraisals as Indicators of "Sickness" (examples: productivity, absenteeism or tardiness, customer complaints, waste, product quality, and down time).	Include weaknesses and area of improvement as well as strong points. Easy to analyze and quantify for purposes of determining subjects and kinds of training needed. These data can be used to identify performance discrepancies.
2. Tests (Job knowledge, skills, achievement).	Can be tailor-made or standardized. Care must be taken so that they measure job-related qualities.
3. Attitude Surveys	On the individual basis, useful in determining morale, motivation or satisfaction of each employee.
4. Assessment Centers	Combination of several techniques into an intensive assessment program.

(contd.) Table 1: Sources of TNA Data (Moore and Dutton ,1978: 532 – 45).

2.7.1 Data From Multiple Individual Perspectives

Since conducting TNA systematically requires questions to be answered at organizational, operational and individual levels, therefore, information and participation from individuals at different levels of management are necessary. For example, Noe (2005) described how three major parties in organizations could be important sources for the TNA process.

2.8 Key Concerns in the TNA Process

	Upper-Level Managers	*Mid-Level Managers*	*Trainers*
Organizational Analysis	Is training important to achieve our business objectives? How does training support our business strategy?	Do I want to spend money on training? How much?	Do I have the budget to buy training services? Will managers support training?
Person Analysis	What functions or business units need training?	Who should be trained? Managers? Professionals? Core employees?	How will I identify which employees need training?
Task Analysis	Does the company have the people with the KSAs needed to compete in the marketplace?	For what jobs can training make the biggest difference in product quality or customer service?	What tasks should be trained? What KSAs or other characteristics are necessary?

Table 2: Key Concerns of Three Parties in TNA (Noe, 2005: 77)

The table above shows differences of concerns and roles that each group plays in TNA. The upper-level managers' concerns are on how training fits in the overall operations of the organization and how can it be used to achieve the company's strategic objectives. This level consists of directors, chief executive officers (CEOs), and vice presidents. Middle-level managers are those who lead each department, unit or section in the organization. They are interested in the effect of training on the attainment of financial goals of the units under their supervision. This group plays their part by thinking how each unit can work in line towards the strategic direction of the organization. As for the trainers, their main concern is directly related to planning and designing the most suitable training interventions to fulfill the needs of the organizations and the respective units.

Involvement of subject-matter experts (SMEs) is particularly important when conducting operational analysis (Noe, 2005; Lampe in Wright and Geroy, 1992). According to Noe (2005), SMEs can be "*employees, academics, managers, technical experts, trainers, and even customers or suppliers who are knowledgeable in regard to (1) training issues including tasks to be performed; (2) KSAs required for successful task performance; (3) necessary equipment; and (4) conditions under which the tasks have to be performed*" (p. 77). Data that SMEs provide is important as an input for designing of training programmes in terms of what the programmes should cover and what items should be prioritized in the training (Noe, 2005). In the case where SMEs are outsiders, a good understanding regarding organizations' business nature and practice is important for them to provide useful information (ibid.).

Perhaps the most common and important source of data are immediate supervisors (Stanley, 2002). The close proximity involved in their daily interactions may give them the chance to study the strengths and weaknesses of their subordinates. Nevertheless, there are those who are opposed to relying on their sources due to the inaccuracy of data they might provide. Ford and Noe, for example, suggested that a manager's attitude towards training may affect his or her view of the amount and type of training needed, so that their suggestions might be of questionable value (Wright and Geroy 1992). Graham and Mihal (1986 in Wright and Geroy, 1992) also stated that managers' requests tended to be 'wish lists' rather than 'needs' and that one out of every four programs they recommended would be unnecessary and a waste of training funds.

Having employees to self-assess their training needs is also a common method in determining training needs in most organizations. Organizations produce an annual training plan and employees can request for training that they think are relevant to their needs (Rossilah, 2002). Those who are in favor of the method believe that self-assessment of performance and training needs have several advantages such as: employees themselves are considered to be the best source of information regarding their needs, self-assessment encourages the employees to take responsibilities for their own development, this method permits faster and more economical approaches to collecting data compared to other methods, employees' motivation to attend training is enhanced and this may encourage

transfer of training (Clarke, 2003; Wlodkowski, 1985; Mathieu, *et al*, 1992; in Clarke 2003, and Graham and Mihal, 1986).

Despite the advantages of the self-assessment method, not everybody favors this method. Issues concerning the reliability and accuracy of data provided by the employees is widely discussed in literature (examples: Mabe and West, 1982 in Clarke, 2003. Blanchard and Thacker (2003) stated that employees tended to overrate their capabilities. McEnery and McEnery (1987) found in their study that training needs self-assessed by employees were incongruent with the training needs actually viewed by their supervisors. Nowack (1991 in Chiu, *et al*, 1999) agreed that employees sometimes requested training that they 'wanted' but did not 'need'. This is in line with Graham and Mihal's (1986) opinion that employees tended to desire training that was not strategically relevant to organizations needs.

Clients can also be an important source of data especially data, regarding the overall efficiency of organizations or regarding particular employees' performance. Wright and Geroy (1992) suggested that clients' opinions should be gathered in the TNA process since they are the ultimate reason why training is provided in the first place.

It is also common for organizations to compare themselves with their best relevant competitors. Known as benchmarking, it is one of the most common management tools and has gained popularity in the late twentieth century. A lot of companies look at other companies' training practices to determine what training to offer to their employees and what training is the most popular in the industry. An example of a benchmarking effort was one organized by the American Society of Training and Development. The ASTD designed a common survey instrument to be completed by its company members asking for information such as their training costs, size of workforce, administration, and program development and delivery. This information is then shared by the participating members. Examples of mega companies that participated include Chevron, Federal Express and Xerox (Noe, 2005).

Nevertheless, extra care must be taken when companies decide to adopt the benchmarking technique. What is offered in one company may not necessarily be 'needed'

in another company. A proper analysis of the organizational needs according to its context must be conducted to determine the suitability and importance of any training programs in the organization. Furthermore, organizations that adopt benchmarking may only be 'on par' with the practices adopted by their competitors and would not be able to enhance their organizational effectiveness in order to gain competitive advantage over others (Rodwell, *et al*, 2000). According to Rodwell, *et al* (2000) organizations who adopt benchmarking must not get caught in becoming followers in the industry, but rather use the information obtained from benchmarking only as a foundation to develop new practices to become leaders in their industry.

2.9 Data Gathering Methods

Throughout this study, methods and techniques used to identify training needs were differentiated. Although some authors (for example Chiu, *et al*, 1999; Goldstein and Ford, 2002) used both terms to refer to the same things, this study makes a distinction. Methods refer to the instruments that analysts can use to collect data for TNA purposes and they include methods such as questionnaires, interviews, group discussion methods, observation, etc. Techniques, on the other hand, defined as the procedures to which TNA can be conducted and the analysts may need to adopt some of TNA methods to carry out the techniques. Examples of common techniques are job analysis, task analysis, SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis and performance appraisals.

In general, methods for data gathering can be divided into two broad categories according to the types of data they produce - quantitative data and qualitative data. Quantitative data stresses the importance of something – for example how many employees lack a particular SKA, or how much difference there is between expected and current performance. Examples of methods that provide quantitative data are questionnaires and numerical/ quantifiable tests. Normally, these methods are suitable when data needs to be collected from a large number of the population. Therefore, it is usually easy to administer, simple and economical for analysts to use, especially when a quantity of something is emphasized. Quantitative data is also generally preferred by top management compared to qualitative data as it provides hard evidence regarding a training need.

Qualitative data, on the other hand, emphasizes the underlying definition of something. Methods like interviews, focus groups, on-site observations, reviews of literature or records, are normally used when the analysts need to explore in detail the data they discovered quantitatively. In order to use qualitative data gathering methods effectively, needs analysts need to possess skills like good communication skills, emphatic listening, interpersonal skills, and the ability to observe objectively and subjectively. These methods normally take more time, effort and money to be utilized.

A useful reference regarding TNA data sources and techniques is by Moore and Dutton (1977). They reviewed a series of literatures and accumulated various TNA data resources, measures, and research techniques with the intention of examining any mismatches between the theory and practice of TNA. Most data sources normally referred to in TNA already exist in organizations and were original gathered for other purposes. Although admitting the advantage of such data, as they had a direct focus on performance issues, nevertheless Moore and Dutton expressed concern regarding the use of such data in TNA. This was because the data was collected for other purposes, therefore may not have been totally suitable and accurate to be used in identifying issues TNA concerns such as: what is the performance problem, whose performance is affected, is it caused by the lack of SKAs, can it be solved by training, and which employees really 'need' to be trained.

Examples of data gathering methods that can be used in TNA activities are described below:

- Questionnaires

  Questionnaires are probably the most common method used to gather data in the TNA process. This may be because it is the most economical as it could be administered to a large population. Among other advantages of this method are that it is also relatively simple to administer, straightforward and easier to analyze. Questions can be structured into five basic types of response formats which are close-ended, rating, ranking, multiple-choice and open-ended questions (McClelland,

1994i). Combinations of both close and open-ended questions will allow analysts to get quantitative as well as qualitative data.

Although this method seems simple, however, data gathered through this method will only be reliable if the questionnaire is properly designed, administered and analyzed (McClelland, 1994i). To design a good questionnaire that can determine accurate training needs, a group of SMEs will have to discuss the key elements to a particular job. These elements will then be transferred into questions and included in the questionnaires. Designing the correct questions with the correct format is crucial so that any performance deficiencies and thus potential training needs of employees can be determined.

A lot of on-the-shelf questionnaires are readily available for organizations that do not have the expertise to custom-design their questionnaires. Known as standardized questionnaires they can be used to measure employees' opinions, organizational climate, organizational culture and generalized training needs, and these can be bought from most training organizations / consultants (McClelland, 1994i). These questionnaires tend to be more valid and reliable since they have been tested and used so many times. However, care must be taken when adopting such questionnaires as they might not be wholly suitable for organizations and might not match the organizations' missions and objectives due to their nature of 'one-size-fits-all' approach. Therefore, the accuracy of training needs of the organizations may be affected (McClelland, 1994i).

- On-site Observations

On-site observations are normally used to distinguish between effective and ineffective behaviours, organizational structures and processes. It is also a common method to conduct job analysis. Observations must be carried out by subject-matter experts (SMEs) if the data they yield is to be useful. One criterion for selecting SMEs is that they need to be experienced and knowledgeable about the job they observe (McCllelland, 1994ii).

This method is only useful if the job is observable, measurable and analyzed in terms of what SKAs are required to perform the job effectively. Observations should be used in conjunction with other methods such as questionnaires, as relying solely on it could not give enough nor reliable TNA data.

- Focus Groups

Focus group is a group discussion method normally involving eight to twelve people discussing an issue. According to McClelland (1994iii), it is advisable if the group members consist of individuals from various departments and natures of job. This is probably because the more diverse the members, the more variety of ideas the members can bring. However, caution must be taken when members from different seniority / position levels are included as involving those who have superior-subordinates relationships can lessen their participation due to discomfort in raising opinions (McClelland, 1994iii).

The success of a focus group discussion depends largely on the ability of its facilitator to control the group's discussion. A good facilitator must be someone who is qualified, experienced and neutral. The facilitator must be able to find out the beliefs, attitudes, thoughts and feelings of the members regarding a subject. The facilitator must also know how to control interaction among members and give each member a fair chance to contribute opinions on an issue.

Focus groups are often used with other quantitative methods like questionnaires. In the TNA field, focus groups are a good way to provide preliminary data and as a basis to compose items to be included in questionnaires.

- Brainstorming

Brainstorming techniques are another example of group discussion methods and excellent to be used in TNA if analysts need to collect as many ideas as possible. There are a few steps involved in this technique (DeVito, 2000). First, a facilitator

will define and explain a situation / an issue to group members and request them to give their opinions / ideas on the subject. All ideas from every member will then be recorded on a board to be seen by every body. All members are not allowed to criticize or praise the ideas until no more new ideas are contributed. After all ideas are recorded, members will combine any similar ideas or extend the ideas to improve them. The process goes on until the best idea is chosen and agreed by all members.

- Interviews

As a qualitative method, interviews can provide needs analysts with richer and deeper data compared to quantitative methods such as questionnaires. Interviews can be used either before questionnaires are formulated or after questionnaires are administered to employees. The former is used to gain initial information from a very small number of key samples and this information can be used in guiding the analysts to formulate questionnaires. The latter approach is normally adopted when analysts need further clarification on certain items from some respondents of questionnaires administered earlier. Another advantage of the interview method is the opportunity for analysts to discover other issues that might not be possible through other collection methods. Nevertheless, as with other qualitative methods like focus groups and observations, the success of this method largely depends on the skill of interviewers to extract information from respondents.

- Performance Appraisal Forms

Determining training needs based on performance appraisal is the most common and most widely used method in determining training needs (Brown, 2002; and Agnaia, 1996). Usually, at the end of an appraisal form, a space is provided for supervisors to state strengths and weaknesses of the appraised employee and recommend areas that the employee needs to improve and develop.

This method is also considered as one of the most complex and controversial techniques in the human resource field. (Roberts, 2002). In terms of TNA, the use

of performance appraisals to determine training needs remains a debate. This is due to various problems associated with the method that can affect the accuracy of the identified needs (Leat and Lovell, 1997; and Herbert and Doverspike, 1990). The first issue is related to the multi-purpose nature of performance appraisals. As acknowledged, the method is used for making various human resource decisions such as salary increment, promotions, demotions, terminations, including assessment of employees' training and developmental needs (Harris, 1997). With too many objectives trying to be achieved from one single instrument, there is a tendency towards conflict between objectives (Rees and Porter, 2004). The concern is whether we can accurately determine training needs from an instrument meant to measure other objectives.

The second issue concerns the accuracy of raters' judgments in appraising employees' performance. It is widely known that there are a lot of biases that may influence raters' perceptions of employees such as halo effect, attribution, primacy-recency, and strictness-leniency. These errors may influence how raters evaluate employees' performance levels which in turn might affect the accuracy of training needs data. Even if the raters could make very accurate judgments regarding employees' performance, however, there is the question of the extent to which they can match the employees' weaknesses with a recommendation of a specific training program (Herbert and Doverspike, 1990). As explained earlier in this chapter, there are two possible causes of performance problems: lack of SKAs and problems with contextual factors. In this case, are the raters completely certain that employees' poor performance are due to lack of SKAs before recommending training for them?

Due to the problems involved in performance appraisal systems, therefore, caution must be taken when relying on it as a method to gather TNA data. Performance appraisals will provide valuable data for TNA purposes only if the intention of using it as a TNA method is predetermined in advance so that the system can be properly developed according to TNA purposes. Organizations should also use other methods such as interviews, surveys and tests to produce better TNA data (Brown, 2002).

- Delphi Method

The Delphi method was created by the RAND (an acronym for Research and Development) corporation in 1944 to address a future military issue (Lang, 1995). The method has becoming increasingly popular in many organizations as a tool to forecast future business demands and to plan necessary changes to accommodate the demands. The use of Delphi in TNA was recommended as one of the tools to analyze training needs (Ulschak, 1983).

In general, the Delphi method is another form of group discussion method that enables communication among members who are geographically distant from each other. Essentially, the method was developed based on an understanding of the concept of group dynamics. First, it is acknowledged that each member may not have all the information and perspectives that other members have. This creates the need to make decisions in group to produce better decisions. Second, some members are not comfortable to give opinions in front of other members, especially those of higher level positions. Due to these needs, therefore, the Delphi method was created.

Communication among participants is through a series of questionnaires managed by a facilitator. Explanations on how this method works can be found in Ulschak (1983), Peterson (1998) and DeVito (2003).

- Assessment Centers

After employees' selection and promotion, the assessment centers are widely used to determine employees' training needs (Beck, 1983). Assessment centers involve the use of various combinations of measures to identify training needs. Examples of measures that can be used are psychometric inventories, interviews, observed performance on simulated tasks, written tests, peer rating, role plays, in-basket exercises, business games and presentations (Osborne, 1996; and Beck, 1983). Due to the variety of exercises and multiplicity of raters, results of assessment

centers tend to produce specific, reliable and valid information regarding employees' strengths and weaknesses. This allows the most suitable training needs for the employees to be determined.

However, assessment centers may not be practical for all organizations as they can be quite expensive. It may only be suitable for large and established organizations that can afford such complicated and comprehensive training systems. Due to this reason, this method is normally used only for senior-level employees (Osborne, 1996).

- Advisory Committee

An advisory committee is another form of group decision making technique that involves employees of different levels in organizations who have information regarding an issue. It may also include subject-matter experts (SMEs). Among the advantages of this method are: it builds management involvement and sponsorship in the TNA process, it is inexpensive to carry out, and it involves key decision makers thus making the task of implementing the results easier (McCoy, 1993). However, this method is time consuming, sometimes difficult organizing meetings involving all members, and there is a tendency towards groupthink syndrome in the group decision making (ibid.).

- Skills, Knowledge and Abilities (SKAs) Tests

Tests are a hybrid form of questionnaire. They can be used to measure employees' levels of skill, knowledge and ability (SKAs). Advantages of tests include: showing whether a performance problem is actually caused by a deficiency of knowledge or skill or whether the problem could be solved by an elimination of ineffective attitude; and the results are also easy to analyzed and compared. Nevertheless, limitations of these methods are that not many reliable tests exist to measure a specific situation (Steadham, 1980 in Goldstein and Ford, 2002).

- Document Reviews / Examinations

As stated earlier, there are a lot of documents readily available that can provide data for TNA exercises. Examples of these data are records on employees' productivity, absence rate, organizational chart, etc. The advantages of available data are that they can provide objective evidence regarding performance problems, and analysts do not have to spend more resources in gathering them.

However, existing data must be treated with caution. They tend to be incomplete and do not show the background and causes of the problems, are normally quite old, and skilled data analysts are a must in order to examine and make sense of the data in TNA contexts (Steadham, 1980 in Goldstein, 2002).

Since each method has its own advantages as well as disadvantages, it is therefore best to use more than one method in the TNA process. To yield the most successful and reliable results, analysts are advised, if possible, to include both of quantitative and qualitative data as involve views from different individuals' perspectives (Wagonhurst, 2002).

Although there seems to be abundance of methods that can be used in TNA as presented in this section, however, they are not specially developed for TNA purposes or are not exclusive to the field of TNA. Chiu, *et al* (1999), based on a literature review of 44 published studies that have appeared in literature for the past 25 years, commented that most methods found in the literature were not originally developed for the purpose of conducting TNA. Although the methods may be appropriate to be utilized in most traditional TNA models, however, they may not be able to determine organizational future needs which are emphasized by front-end TNA models that focus on future needs of organizations (ibid.).

2.9.1 Criteria in Choosing Methods

There are a few criteria normally considered when choosing data collection methods, and suggestions made by Steadham (1980) or Brown (2002) can be used as references. For example, Steadham (1980, in Ulschak, 1993) reviewed criteria normally considered by

organizations in choosing data gathering methods in TNA, which include: resources (time, money, people) availability in the organization, health of the organization, persons to be involved, desired outcomes, extent to which needs are already known, decision-makers' preference, time lag between collection / action, degree of reliability and validity needed, confidentiality and training needs analysts' favourite method. Brown (2002) stated that analysts need to consider the following when choosing which technique to use: nature of the problem, budget, perception towards TNA in organization, staff availability, timeframe, etc. The relevance and importance of each criterion depends on the organization itself and the purpose of a particular TNA.

2.9.2 Sampling in TNA

In order to gather data, analysts will have to have to consider two issues- the quality and quantity of data. Both issues are related to sampling. The first issue deals with the issue of whom to be included as samples. In order to decide this, Peterson (1998) suggested that respondents should fulfill the following criteria: know the answers to the questions, be powerful enough to influence or implement the results of the TNA process, be viewed as important by their respective groups, be familiar and experienced in the nature of problems under study and be up-to-date on the overall needs of the organization.

The second issue deals with the quantity of data, that is, how many samples to be included. Based on the rule of thumb normally applied in typical research, the size of samples would be based on the size of the population. The smaller the population, the bigger the sampling ratio has to be to ensure that researchers get an acceptable quality of data (Neuman, 2003). In the context of TNA, analysts must also consider the administration costs in conducting the TNA, as large samples would affect the resources to be spent for analyzing the data. Peterson (1998) proposed that the number should be manageable by the analysts i.e. up to 20 well-selected people.

2.10 TNA Techniques

As mentioned earlier, techniques used in TNA refer to the procedures in which the activity can be conducted. Discussions of these techniques are categorized according to the three levels. Each technique is designed to analyze needs at the organizational level, operational level and individual level. These techniques are described as follows:

2.10.1 Organizational Level

Several techniques to analyze organizational external environments exist in the literature. These techniques are actually developed to measure overall effectiveness of business performance and to help companies plan their strategies and missions, which may include the need to enhance their human resource capabilities. Common techniques that can be used at organizational-level analysis are described below:

- Organizational Scanning

Organizational (or environmental) scanning is a management process of acquiring and using information about events, trends, and relationships in an organization's external environment to assist the management in planning the organization's future course of action (Aguilar, 1967 and Choo and Auster, 2001). The external environment of an organization includes all outside factors which can affect the performance or survival of the organizations and these can be categorized into six sectors: customers, suppliers, competition, socioeconomic, technological and governmental sectors (Jauch and Gluech, 1988).

Organizations scan the environment in order to understand the external forces of change so that they may develop effective responses to secure or improve their position in the future. Organizational scanning constitutes a primary mode of organizational learning which includes both looking at

information (viewing) and looking for information (searching). Four styles of scanning that can be used are: undirected viewing, conditioned viewing, informal search, and formal search (Aguilar, 1967). Organizational scanning can also take place at multiple levels of detail. At high-order levels, scanning looks at the total environment, and at low-order levels, it focuses on specific areas and analyses them in detail.

The use of this technique to analyze training needs at organizational level was mentioned in Chiu, *et al* (1999). As a result of the scanning, organizations could be provided with a lot of possible training (and non-training) needs for responding to changes in the external environment. Research evidence claimed that this technique was linked with improved organizational performance (examples: Newgren, *et al*, 1984; Dollinger, 1984; West, 1988; and Murphy, 1987).

- Balanced Scorecard

The Balanced Scorecard was developed by Kaplan and Norton in 1996 and is considered to be one of the most important instruments used to measure business performance (Marr and Schiuma, 2003). The technique involved measuring organizational performance based on four balanced perspectives: financial, customers, internal business processes, and learning and growth. Kaplan and Norton claimed that the technique enabled organizations to combine financial measures of their past performance with measures of future financial performance to help them remain competitive.

The Balanced Scorecard can be used to clarify and gain consensus about strategy, communicate strategy throughout the organization, align departmental and personal goals to the strategy, link strategic objectives to long-term targets and annual budgets, identify and align strategic initiatives, perform periodic and systematic strategic reviews, and obtain feedback to learn about and improve strategy. Results of implementing this technique provides organizations with plenty of training as well as non-training needs.

- Strengths, Weaknesses, Opportunities, Treats (SWOT) Analysis

SWOT analysis is a technique based upon a simple matrix, with strengths and weaknesses described in the two top squares and opportunities and threats (OT) in the bottom two squares. It can provide information that is helpful in matching organizational resources and capabilities to the competitive environment in which it operates (Craig, 1994).

Organizations are required to identify the strengths, weaknesses, opportunities and threats concerning their organizations. Examples of strengths include strong brand names, patents and a good reputation among customers. Weaknesses, that is those that can hinder organizations from achieving their objectives such as lack of access to the best natural resources and high cost structure. Opportunities to overcome weaknesses are then identified and examples are unfulfilled customer needs or removal of international trade barriers. And lastly, threats to a firm can exist in the form of changes to its external environment, for example, shifts of consumer tastes, emergence of substitute products or new regulations. SWOT analysis helps firms identify strategies and measures to address their needs in the following way:

	Strengths	Weaknesses
Opportunities	Strategies to pursue opportunities that are a good fit to the companies strengths.	Strategies to overcome weaknesses to pursue opportunities
Threats	Strategies to identify ways that the firm can use its strengths to reduce its vulnerability to external threats.	Strategies to establish a defensive plan to prevent the firm's weaknesses from making it highly susceptible to external threats.

Table 3: SWOT Analysis Matrix (http://www.QuickMBA.com)

- Political Economic, Social, Technological (PEST) Analysis

PEST (or sometimes known as PESTLE -Legal and Environmental) is a technique used to analyze organizational macro-environmental factors (Mullins, 1999). Political factors are government regulations and legal issues under which organizations must operate. Examples are tax policy, employment laws, government ownership of industry and attitude to monopolies and competition. Economic factors affect the purchasing power of potential consumers and a firm's cost of capital. Examples are inflation rates, interests rates and economic growth. Social factors are demographic and cultural aspects of a firm's external macro-environment. These factors affect the needs of customers and size of potential markets. Examples of social factors are population growth rate, health consciousness and attitudes towards work and leisure. Technological factors can lower barriers to entry, reduce minimum efficiency production levels, and influence outsourcing decisions. Examples are R & D activity, rate of technological change, and new patents or products. Information derived from PEST analysis can identify opportunities and threats in the SWOT analysis matrix.

2.10.2 Operational Level

Several techniques are available to determine the SKAs involved in a particular job. Although they are called under different names, however, their concepts and uses may differ little.

- Job Analysis

Job analysis refers to a process of collecting information regarding a job by answering two basic questions: what the job involves, and what knowledge, skills and abilities (KSA) are required by an employee to perform the job successfully (Harris, 1997). Job analysis is not exclusively conducted for training purposes. It is also used to help other human resource functions such as hiring, compensation, safety, career development, etc. (Cascio, 1991 in Harris, 1997).

Job analysis results in two types of documents: job descriptions (list of tasks involves in the job) and job specifications (list of KSAs, experiences, and qualifications required to perform the job).

The following steps can be carried out to determine possible training needs from the Job Analysis exercise. First, a group of the job's subject-matter experts (SMEs) decide on the importance of each key responsibility of the job as stated in the Job description document. Second, training needs analysts design forms and distribute them to job incumbents. The worksheet lists out the key responsibilities and job incumbents are required to determine their levels of difficulty, importance and frequency in performing the listed tasks. The forms are collected and the mean of each key responsibility is calculated. Attention is given to tasks rated as the most important, most difficult and most frequently performed. Based on the result, training programs are proposed.

However, the usefulness of job analysis as a technique to determine the requirements of a job is questionable as some claim that it is less effective due to its slow reaction to rapid changes taking place in the 21st century (Rossilah, 2002). This belief is probably due to two reasons (Johnston, 1999). The first reason is due to the increasing rate of obsolescence of equipment and machines. Due to its short shelf-life, it is a waste of resources to collect data regarding a particular job as such data would need to be gathered again in the near future. The second reason is the diminishing boundaries between jobs as organizations become more flexible and adaptable, employees are more likely to move from one project to another based on teams rather than fixed on one task throughout their employment, thus making TNA exercises undertaken for one job possibly incompatible for another (ibid.).

- Competency Analysis

The competency approach to training has attracted the interest of many organizations. Traditional TNA models tend to concentrate on the identification

of SKAs. Competency TNA models, on the other hand, enable organizations to discover not only the SKAs but also the values and personal characteristics necessary for both current and future organizational demands (Lucia and Lepsinger in Noe, 2005). Competencies refer to knowledge, skills, attitudes, mindsets, and thought patterns that an individual employee must possess in order to perform jobs successfully (Dubois and Rothwell, 2004). The employee who possesses this group of competencies should be able to perform well in any job within the same category (such as managerial). The competency approach to TNA differs from traditional approaches to TNA as its focus is not limited to current performance discrepancies and goes beyond examining current job description documents.

Competency models have several purposes. They are used as a yardstick to measure employees' performance in performance appraisals. They are also used as a basis for determining training and development needs of the employees. Steps normally carried out in the competency model are firstly, identify job to be analyzed; secondly, identify changes in organizational strategy and their implications on training needs; thirdly, identify changes in organizational strategy and their implications on training needs; fourthly, identify effective and ineffective performers; fifth, identify the competencies responsible for the effective and ineffective performers; and finally, validate the competencies by determining appropriate proficiency levels of each competency (Noe, 2005). A further discussion on how to apply this technique to determine training needs can be found in Ulschak (1983) or Noe (2005).

- Skills Inventory

According to Mbawo and Zambia (1995), skills inventory involves the comparison of skills and knowledge required to perform a particular job with the skills actually possessed by the job incumbent. The discrepancies are then used as a basis to plan any training interventions for the employees.

The underlying approach of this technique is probably still based on the traditional view of TNA, i.e., training is provided when there is a gap between current and expected performance. Documents such as job descriptions are needed to make the comparison.

- Managerial Skills Audit

As the name implies, managerial skills audit is used particularly for managers. It involves the use of an instrument consisting of a self-evaluation and an evaluation to be completed by at least three significant parties, namely the supervisor, the member of staff and colleagues (Mbawo and Zambia, 1995). There is probably a similarity of technique with one called Management Audit. In Management audit, the individual manager and his / her superior complete an audit form separately (Osborne, 1996). Questions in the form involve statements regarding good organizational practice such as "you review work progress regularly" with a several answers option provided. Results of the audit are then compared and discussed between the manager and his / her superior. Any differences may be taken as an indicator for training needs or may require other non-training measures. According to Osborne, management audit can be carried out either together with performance appraisal exercises or separately. Advantages of this technique are said to be allowance of open discussion between two parties regarding performance problems and ways to solve them. It is also easy to use.

2.10.3 Individual Level

- Performance Review / Appraisal

This technique is the most common technique used in organizations (Wessman, 1975 in Leat and Lovell, 1997; and Osborne, 1996). There are many ways in which performance reviews can be conducted based on who the raters are. Individuals' performances can be reviewed by their supervisors (upward

appraisal), subordinates (downward appraisal), themselves (self-appraisal), colleagues (peer appraisal) and by multiple raters of different ranks (360-degrees appraisals). Skepticism regarding this technique has already been discussed earlier in this chapter.

- Repertory Grid Analysis

Repertory Grid Analysis was suggested as a technique to identify training needs at individual level by several authors such as Peters (1994), Craig (1994), and Osborne (1996). It involves a series of structured interviews involving managers. The technique requires managers to identify, compare and contrast good performers against poor performers. Peters (1994) claimed that the techniques have a few advantages if compared to other less rigorous techniques. First, it helps people capture subjective ideas / opinions. Second, it discovers new insights regarding a performance issue. Third, it helps managers to understand and differentiate good and poor performance. Fourth, it helps managers to better understand the organization overall. Skilled and competent interviewers to extract managers' views, opinions and ideas are necessary for the technique to be successful. A further explanation regarding this technique can be obtained from Peters (1994) or Craig (1994).

- Versatility Chart / Analysis

The technique uses a checklist approach to evaluate a person's skills and the lack of them. Results of the Versatility Chart would identify an individual's training needs and a training plan to fulfill those needs. The technique involves raters ticking / filling in a simple matrix listing employees' names and tasks. Data is gathered through interviewing or observing the employees to identify their SKAs. A self-assessment method can also be used. A further explanation about the steps and examples of this technique can be found in Osborne (1996).

- Diary Analysis

Osborne (1996) suggested Diary Analysis as one of the techniques to conduct TNA. As the name implies, diary (or sometimes journal) analysis involves employees recording their behaviours, thoughts, feelings, hopes, difficulties, fears etc on a diary. Diary analysis can be structured or unstructured. The structured method is normally used to analyze how employees utilize their time on a specific task. Interpretation of the records needs to be discussed with the employees' supervisors and team members, and assessed against some standards of performance. Results of this will pinpoint any need for training. The unstructured method is employed when employees' detailed thoughts / feelings are needed to describe a situation / task / job by comparing their current performance with an expected performance and this is normally done with the help of competent TN analysts. The benchmark would provide the needs for training for the employees. Limitations of this technique are that it can be time-consuming and requires proper monitoring of and briefing to employees by analysts.

- Critical Incident

The Critical Incident Technique accumulates the use of survey questionnaires, face-to-face and group interviews as methods to gather data. It is mainly used to investigate accidents or failures and to understand skilled behaviours for effective performances. Craig (1994) suggested this method to be used in determining learning needs of employees and claimed that the technique could show the extent to which learning is the main factor to contribute to an effective incident. Such information is useful to design an appropriate learning intervention.

Training needs are derived by comparing the response of an employee regarding his / her actual behaviour on the job with the 'skilled' response (what behaviour is actually required). Strength of the technique is that it focuses on

actual job behaviours which are considered critical for successful performance. Unfortunately, it may take a considerable amount of time to implement (Osborne, 1996).

With a lot of techniques available in the literature, one has to make the right choices on which technique to choose. Craig (1994) advised that selection of TNA techniques should be based on a few things such as the background of the performance problem and the expertise available in the organization to carry out the techniques. According to Peterson (1998) *"the real key to being a good analyst for identifying and analyzing training needs isn't so much the ability to carry out a particular approach with a reasonable degree of proficiency. It's being able to work out, set up, and apply the particular approach right for the situation, people, and issues you're dealing with"* (p. 138).

2.11 Conclusion

This chapter has discussed various data sources, data gathering methods and TNA techniques that can be used to analyze training needs at organizational, operational and individual levels as appeared in the literature. The extent to which these sources, methods and techniques are useful in practice and are applied by organizations will be elaborated in the next chapter.

CHAPTER 3

THE PRACTICE OF TRAINING NEEDS ANALYSIS

3.1 Introduction

The previous chapter has discussed the concept of TNA from theoretical perspectives. This chapter presents the actual practices of TNA in organizations. Various findings regarding TNA practices, mainly obtained from past surveys, will be described to show the reality of TNA practice. This chapter is important in order to see the extent to which espoused TNA theories find their relevance and usefulness to human resource practitioners.

3.2 Evidence From Previous Researches

The problem of informal practice of TNA in organizations has long been an issue. In 1952 Mahler and Monroe (in Moore and Dutton, 1978) conducted a survey to identify TNA practices in industry and found that only one in ten companies involved in the survey conducted a systematic approach to TNA. Judgmental approaches like management requests and talks with supervisors were found to be the most popular ways of determining training needs. Now, 50 years on, the situation has changed little. The following table shows findings from several researches regarding TNA practices in various types of organizations.

Researchers	Findings
Erffmeyer, *et al* (1991)	A study was conducted to determine needs assessment and evaluation practices of members / organizations of the American Society of Training Development (ASTD) involved in sales-related industries. 360 questionnaires were mailed to the respondents and 93 usable questionnaires (30 per cent return rate) were analyzed. It was found that the most important sources referred by the organizations to determine TNA at organizational level were management judgment, interviews with present salespeople, performance measures such as sales volume, customer service and customer complaints, and organizational training goals. The least important information sources were competitors' sales training programs and interviews with previous sales people. At task / operational level, the most important / important information sources were found to be judgment by upper management, the training department, performance measures, job descriptions/ job specifications, and interviews with present salespeople. Whereas, at individual level, the most and only important source of information was judgment of upper management. It was found that most demographic characteristics of the organizations, such as annual sales, number of employees, size of salesforce, and size of training department did not influence their TNA practices. However, the research showed that service organizations in the service sector considered some information sources at organizational level (namely performance measures, interviews with customers, and organizational and training goals / objectives) significantly more important than manufacturing organizations. Overall, the study claimed that systematic and formal needs assessments were not practiced in the organizations' sales training programmes. Two-thirds of the organizations relied on informal, top-management judgmental approaches to TNA and in terms of frequency of practice, only one-third stated that they 'often' conducted TNA in their sales training programmes.
Amos-Wilson (1996)	A questionnaire survey was conducted on 21 non-governmental organizations (NGOs) of varying sizes in the United Kingdom regarding their attitudes towards management training. All aspects of training, namely the TNA, design, implementation and evaluation of management training were investigated, and what the study found was a less than systematic approach to their TNA practices. There was evidence of a turn-taking system whereby employees were sent to training because it was their turn. Most trainings conducted in the organizations were reactive in nature such as responding to mandatory training required by law or equipping employees with the SKAs in order to replace those who intended to resign. The research discovered less attention paid to personal developmental training needs. The performance appraisal approach was used by six organizations, nevertheless, its use was more towards pinpointing remedial training needs rather than developing individuals for future career needs. Most organizations (19) reported using help from external consultants to conduct their management training. Finally, the research suggested a mismatch between the overall organizational strategic needs and the types of training actually delivered to the staff.

Table 4: Findings of Various Surveys on TNA Practices.

Researchers	Findings
Agnaia (1996)	The survey was conducted involving 45 oil and non-oil companies in Libya to study their management training needs assessments and selections for training practices. Data were collected through several methods including questionnaires, interviews, observations and the researcher's personal experiences in the Libyan industry. In oil companies, the most common ways for employees to attend training were through results of performance reviews, nominations by colleagues to represent their departments, applications by employees, direction from superiors, and finally discussion with their MTD managers. On the other hand, for non-oil companies, the two most preferred methods were direction from superiors and results of performance appraisals. The research found an unsystematic approach in the way employees were selected for training (that is, views of bosses and performance appraisal results as the predominant approaches used by the majority of both types of companies). Job performance reports were found to be the most common technique used in assessing training needs (64 per cent). Overall, the findings indicated that the approaches and techniques the companies used in selecting training participants and TNA did not involve any communication with the employees and was most predominantly based on the views of their superiors. The main difficulties found in selecting and assessing MTD training needs are listed as follows: - insufficient or unclear procedures regarding training activities in organizations - lack of autonomy of MTD managers to make decisions - difficulty in gaining government agencies' agreement regarding selection of participants for overseas training - unsteadiness of administrative staff and organizational structure. - lack of cooperation from top management regarding training activities. - lack of co-operation from other departments - problems such as ethnic loyalty, kinship, and personality conflict between superior-subordinate that might influence the accuracy of identified training needs - shortage of qualified managers especially in key departments The study also found no clear evidence as to whether companies conducted TNA at the tripartite levels of analysis (organizational, operational and individual). The researcher claimed this was probably due to the lack of relevant knowledge or qualifications on the part of the managers put in charge of training and development activities in the companies. The researcher further suggested that proper TNA was often neglected and employees went to training because of the presence of motivational elements associated with the training such as training allowances, possible promotion resulting from the attendance, and also a chance to escape work and responsibility.

(contd.) Table 4: Findings of Various Surveys on TNA Practices.

Researchers	Findings
Elbadri (2001)	A survey to investigate training practices was conducted on 30 human resource managers representing 30 different Polish companies of various sizes and industries. The research showed that organizational size and type of industry affect the training practices. Small companies tend to place less importance on training, not having training departments in the organization nor planning regularly for their training activities. Companies in agriculture and fishing, and also in manufacturing industries were found to recognize training as more important, and this was reflected by having specific training departments in the organizations. It was found that 60 per cent of the companies conducted TNA. It was discovered that the larger the company, the more attention was paid to TNA and companies in the manufacturing industry tended to conduct more TNA compared to companies in other industries. The most common reasons why these companies conducted TNA were due to 'management mandate', introduction of a new program, and alignment of employees' performance to performance objectives. The research did not find any difference regarding data gathering methods used by the companies of different sizes and industries. Overall, the most used methods were management requests (90%), employee interviews (83%), performance appraisals (70%), performance documents (70%), behaviour observations (60%), and questionnaires (50%). Mixed responses were found regarding respondents' level of confidence on whether the methods used differentiated between employees' wants and needs; and on whether the methods produced clear, relevant and specific data on performance discrepancies. Relevancy and quantifiable data obtained, incumbent involvement, cost, time and ease of use were found as the most critical criteria in selecting TNA methods for companies regardless of size or industry.
Poon and Rozhan (2000)	A survey was conducted involving 94 organizations in the manufacturing and services industries in Malaysia. The study reported a positive finding regarding the organizations' TNA practices in which it was found that 92% of them conducted some form of formal TNA to precede their training. Data collected for the analysis include information regarding the job, the organization, individual employees and the environment. Data collection methods used were company records (60%), observations (46%), questionnaires (44%), group discussions (38%), interviews (36%), and tests (11%). Though this finding seemed favorable, however, Poon and Rozhan concluded that TNA conducted by the organizations were largely based on past data, and thus lacked orientation of proactive / strategic TNA. Furthermore, the findings regarding the organization's claim that their training efforts were strategic could be questioned since information on the business environment was rarely referred to as one of the sources for TNA data.

(contd.) Table 4: Findings of Various Surveys on TNA Practices.

Researchers	Findings
Gray, *et al* (1997)	140 state government agencies in 30 states in the United States were surveyed to investigate their training practices. Results showed that only a limited number of these agencies conducted systematic TNA. Only 13 per cent of the agencies conducted TNA on at least 80 per cent of their training programmes. The researchers suggested that this figure is less than the practice of organizations in private sectors (Zemke, 1985 in Gray et al, 1997). Among data gathering methods preferred by the respondents in the TNA process were: employee surveys / questionnaires / skill inventories (first choice: 39%, second choice: 12%), executive or upper management decisions / mandates about training (first choice: 31%, second choice: 15%), advisory committees comprised of all levels of the organization (first choice: 12%, second choice: 15%), and supervisor interviews (first choice: 13%, second choice: 8%). The research found mixed evidence regarding whether the agencies differentiated between training 'needs' and training 'wants'; and whether the data gathering methods they adopted produced clear, relevant and specific data on performance discrepancies. The respondents stated that criteria considered when choosing data gathering methods were: relevant, quantifiable data (first choice: 24%, second choice: 6%); acceptance likeliness by senior management, supervisors, line managers, and target employees (first choice: 23%, second choice: 9%); management and employee participation (first choice: 15%, second choice: 17%); cost (first choice: 14%, second choice: 14%); availability and expertise of HR staff to administer (first choice: 9%, second choice: 9%); time required (first choice: 8%, second choice: 22%); and ease of use (first choice: 6%, second choice: 14%).
O'Driscoll and Taylor (1992)	Questionnaires and interviews were conducted involving 99 organizations employing more than 300 employees in New Zealand to explore how training decisions were made in these organizations, to examine any discrepancies between theory and practice in management TNA, and to determine any implications of this gap on both theory and practice. Overall, the researchers concluded that training decisions in the organizations were not made based on systematic TNA. Although the majority of the respondents claimed that they conducted some form of TNA, however, most of them actually relied on informal procedures. It was also found that involvement of training professionals in the organizations, who were supposed to be actively involved in making training-related decisions, was quite minimal. Critical decisions regarding what training to conduct, contents of training and selection of training participants were mainly made by top management such as CEOs, general managers, personnel managers / human resource directors. The findings also reported a weak relationship between TNA practiced in the organizations and their strategic objectives. The researchers claimed that there was an incongruence between the TNA practiced and TNA theories, and suggested that practicing systematic TNA theories in training approaches could benefit organizations in order to achieve their strategic missions.

(contd.) Table 4: Findings of Various Surveys on TNA Practices.

3.3 Discussions

Table 4 represents research findings involving organizations of dissimilar natures of businesses, sizes, sectors, and countries. With the exception of Poon and Rozhan (2000), all other cases reported an informal and unsystematic approach to determining training needs as opposed to TNA theories. Erffmeyer, *et al* (1991) claimed that systematic and formal needs assessments were absent in the organizations' sales training programmes and found that only one-third of them 'often' conducted TNA in their sales training. Gray, *et al* (1997) reported only a very small percentage of the agencies (13 %) they studied conducted TNA on at least 80 per cent of their training programmes. O'Driscoll and Taylor (1992) also found that overall training decisions made by organizations in New Zealand were not based on systematic TNA. Amos-Wilson (1996) and Agnaia (1996) also discovered similar findings in their respective studies.

Most organizations relied heavily on top management judgment in making training decisions. O'Driscoll and Taylor (1992) stated that all important decisions regarding training from types and contents of training to selection of training participants were made by CEOs, general managers, and personnel managers / human resource directors. Agnaia (1996) agreed saying that the approaches and techniques of both oil and non-oil companies in Libya used in TNA did not involve any communication with the employees and was most predominantly based on the views of their superiors. Erffmeyer, *et al* (1991) also claimed that management judgment was the most important source of information used by the organizations to determine TNA at all three levels of analyses i.e. organizational, operational and individual level. Elbadri's (2001) discoveries are consistent with the other findings stating that 'management mandate' was the most common reason for initiating a TNA and 'management request' was the most used method in TNA.

McGehee and Thayer (1961) termed such practice as the 'armchair cerebration' approach. Relying solely on top managements' judgments might result in organizations investing money unnecessarily on needless 'wants' rather than true 'needs'. This is in contrast to the recommendations of TNA by theorists who require the use of various TNA

tools involving perspectives from numerous parties to gather the actual and more accurate organizational needs.

Two of the studies tested relationships of TNA with organizations' size and sectors. First, Elbadri (2001) claimed that a company's size corresponds with the level of attention / commitment paid to TNA. This view is also concurred with other researchers such as Tung-Chun (2001), Westhead and Storey (1997, in Tung-Chun, 2001) and Vinten (2000). Such a finding makes sense because the smallness of a workforce and limited finances justify not having a separate function specifically for handling employees' HRD matters. Profits generated by small companies are usually small and used to bankroll future businesses as well as pay immediate expenses like employees' salaries, utility bills, etc. Small companies may also not be able to see the benefits of investing on employees' training which usually only comes into affect after a considerable period of time. Nevertheless, having these limitations should not pose stumbling blocks if small businesses are to survive in the long term.

Second, Elbadri (2001) and Erffmeyer, *et al* (1991) found mixed evidence regarding type of sector as one of the TNA determinants. Elbadri (2001) stated that manufacturing companies tended to conduct more TNA compared to companies in other industries. On the other hand, Erffmeyer, *et al* (1991) suggested that companies in the service sector considered performance measures, interviews with customers, and organizational and training goals / objectives as more important sources of information at organizational level compared to the companies in the manufacturing sector. A look in the literature also produced inconclusive results. For example, Rozhan (1998 in Poon and Rozhan, 2000) reported that companies in the service sector outweighed companies in the manufacturing sector in terms of the number of training hours spent on employees at managerial positions. However, in the case of non-managerial employees, manufacturing firms provided more hours of training compared to companies in the service sector. Relating commitment towards training with the origin of organizations, a study by Wan Aziz (1994) found that transnational companies tended to invest more on training compared to local firms.

Two of the researches also studied the criteria of TNA method selection. Combining findings from Elbadri (2001) and Gray, *et al* (1997), various criteria that organizations considered when selecting TNA methods were relevancy and quantifiable data obtained, incumbent involvement, cost, ease of use, management and employee participation, availability and expertise of HR staff, time required, and acceptance likeliness by all levels of employees including senior management, supervisors, line managers, and target employees. These criteria are also in line with Steadham's (1980 in Uschak, 1993) and Brown's (2002) suggestions explained earlier.

Two cases (Agnaia, 1996 and Elbadri, 2001) highlighted lack of top management commitment to TNA, and on the training function in general. Agnaia (1996) listed gaining cooperation from top management and other departments as one of the main difficulties in carrying out training activities. There are probably several reasons explaining this attitude. First, organizations might simply be unaware of the importance and benefits of TNA. Second, they might not have the capital to invest in employee training. Third, they might not want to spend on employees for fear they leave the company after acquiring the new skills before returns to cover the cost of training could be reaped, or they prefer to choose other alternatives, like hiring new employees with particular skills, which might appear easier and faster compared to the non-immediate returns of training. All these reasons definitely influence the practice of TNA since in order to produce an accurate and systematic TNA, participation and collaboration from various parties in organizations, especially to produce relevant data, is crucial.

Training conducted in organizations tended to be reactive rather than proactive Amos-Wilson (1996). The organizations also paid limited attention on employees' personal developmental training (ibid.). This finding concurs with the common use of performance appraisal / review as the technique to determine TNA (Amos-Wilson, 1996; Agnaia, 1996; and Elbadri, 2001). It implies that organizations still concentrate on correcting employees' daily performance and focus less on organizations' future needs. Results from literature reviews on TNA studies for the past 25 years by Chiu, *et al* (1999) can be used to support this finding. It was found that TNA conducted at organizational level dominated the literature and studies to analyze individual needs were the least (ibid.). Although it is

understood why businesses are continuously interested in their bottom-line issues, however, Chiu, *et al* (1999) expressed concern regarding organizations' lack of interest in developing their employees as, in the long run, it might affect their staff's motivation levels.

According to Wagonhurst (2002), in order to determine and analyze accurate needs, TNA must be conducted by professionals with the relevant expertise. However, as shown by Agnaia (1996), TNA in practice was not conducted by the 'right' individuals. Agnaia (1996) suggested that the problem of atheoretical TNA practices was partly due to the lack of relevant knowledge or qualifications of the people put in charge to handle the companies' training and development functions. In another study, Zakaria and Rozhan (1993) found that lack of expertise to conduct TNA was the main reason the 23% (out of the 44 percent of the organizations involved in the study) did not conduct any kind of training needs assessment (in Poon and Rozhan, 2000). These findings seem to suggest a limited awareness of theories about training in general, and about TNA in particular. Although some practitioners might possess some understanding on the subject, overwhelmingly their knowledge is outdated. Dubin (1976) attributes this to their reliance on things they learnt in school without keeping abreast of the changes. Hence some have earned the description of being guided by outmoded theories, as their awareness and application of a theory might come only five to ten years after that theory was published (ibid.).

There is a discussion regarding whether training conducted in organizations is in line with the organizations' strategic missions. Amos-Wilson (1996) concluded that there was a mismatch between the NGOs' overall strategic needs and the type of training that was actually delivered to the staff. O'Driscoll and Taylor (1992) found a weak relationship between TNA practiced in the organizations in New Zealand and their strategic objectives. Gray, et al (1997) found mixed evidence regarding whether the government agencies they studied differentiated between training 'needs' and training 'wants'; and whether the data gathering methods they adopted produced clear, relevant and specific data on performance discrepancies. And, although Poon and Rozhan (2000) reported positive findings regarding TNA practice of companies in manufacturing and service industries in Malaysia, they expressed caution regarding this finding. The companies focused mainly on past

performance data sources and did not examine the business environments in their TNA thus calling into question the strategic nature of their training / TNA efforts.

3.4 Conclusion

The chapter has reviewed and discussed several studies conducted by researchers in various contexts. In general, most studies produced similar conclusions regarding their respondents' TNA practices i.e. their approaches were quite distant from espoused TNA theories. Although findings from these studies are probably adequate for us to form a general idea regarding organizational TNA practices, however, the results are probably insufficient to understand all the relevant details regarding the practices including aspects like people involved, methods used, sources referred to, factors considered, techniques employed at all three levels of analysis, etc. In order to get a better picture regarding organizational TNA practices, therefore, there was a need to conduct a study with a bigger and deeper scope. The next chapter will provide further elaborations.

CHAPTER 4
METHODOLOGY

4.1 Introduction

This chapter describes methodology undertaken for the study. It explains the target population of the study and the procedure used to choose study samples. Justifications for why the particular population was selected are explained. As mentioned earlier, questionnaire surveys were used to gather data for the study. This chapter discusses in detail how the questionnaires were designed, what items were included, with justifications of every item relating to the purpose of the study.

4.2 Research Design

The study was descriptive in nature as it aimed to describe approaches and methods that organizations adopted in their TNA practices. Data was gathered through a questionnaire survey on the top 1000 corporate companies in Malaysia as listed in the Malaysian Top Corporate Directory 2003. The instruments were designed in the final quarter of 2004 based on information from the literature. A detailed diagram describing the study process is shown in Figure 4.

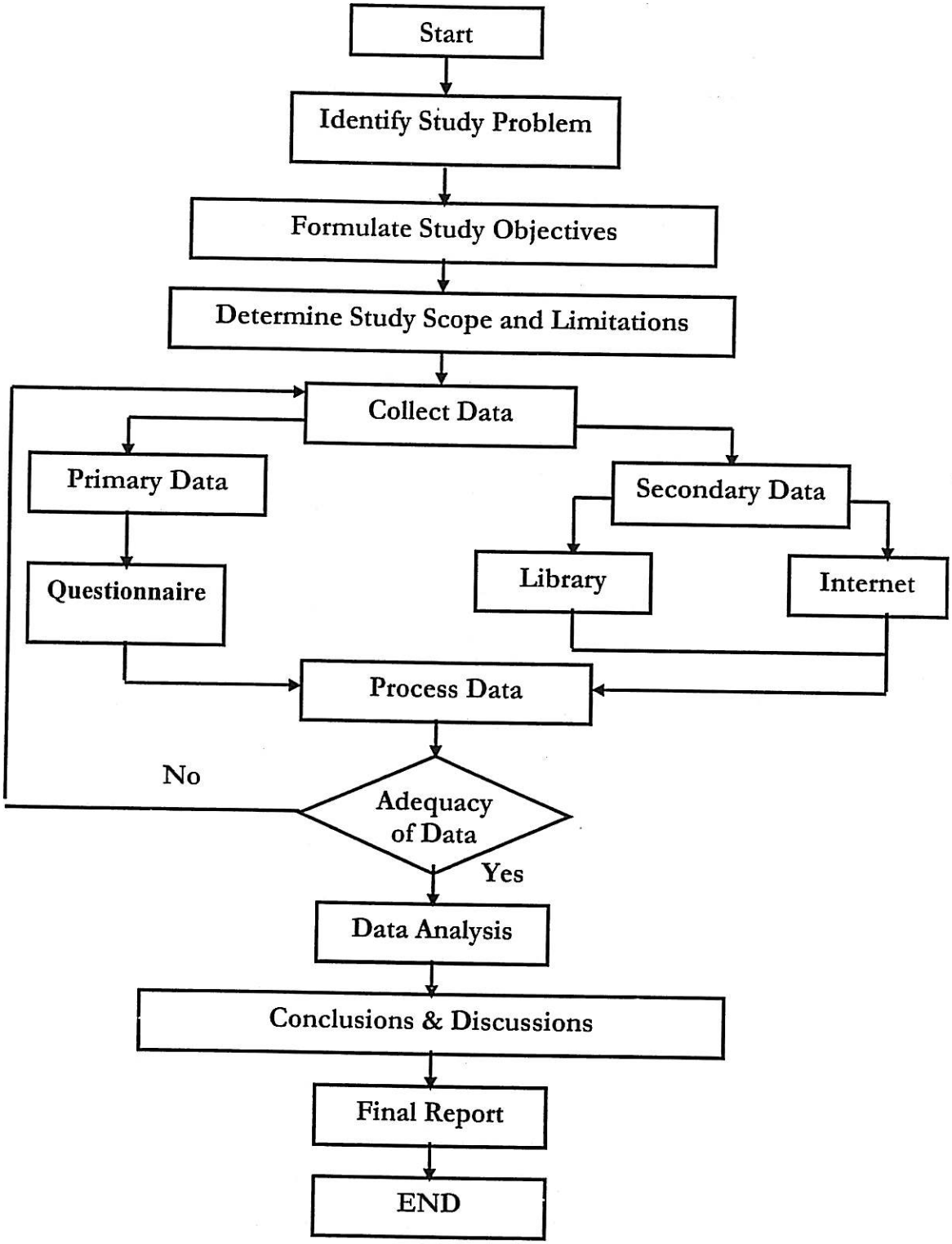


Figure 4: Research Design Flow Chart

4.3 Population and Sampling

The population of the study was based on the directory of *Malaysia 1000* (2003). A complete list of the top 1000 companies is presented in Appendix A. The Directory was published as a joint project of the Companies Commission of Malaysia (SSM), Ministry of Domestic Trade and Consumer Affairs, and Business and Search Information Services Sdn Bhd (BASIS), an associate company of BERNAMA. This annual directory serves the needs of various domestic and foreign business communities including researchers and academicians who are interested in up-to-date and complete information regarding businesses in Malaysia. It was launched by Dato' Seri Abdullah Haji Ahmad Badawi (then Deputy Prime Minister) on June 9th, 2003 at the Palace of the Golden Horses.

The following are a few reasons why the top 1000 companies in Malaysia were chosen to be studied. Firstly, they were the top performing companies that were selected and ranked based on their business performance such as turnover, profits, total assets, shareholders' funds, profit margin, return on capital, return on shareholders' funds, absolute increase in sales, absolute increase in profits, and percentage increase in profits. This information was important to the study because literature showed that training tended to be neglected in small companies (Westhead and Storey, 1997 in Tung-Chun, 2001) and one of the reasons why training was not done systematically was due to financial constraints. Since the top 1000 companies were considered successful, it was assumed that they would tend to be more committed towards training and development activities compared to less successful companies. Selection of population to be studied was, therefore, crucial in this research as focusing on the 'wrong' population would not provide useful nor much information regarding TNA practices.

The second reason was the diversity of the characteristics of the companies, covering various industries, sectors, states, origins of parent company and length of operation. This would provide a comprehensive picture regarding TNA practices in different companies.

The final reason for why the top 1000 companies were chosen as the population was based on the belief widely stated in the training literature that training and developing employees is one of the factors that could enhance organizations' profitability (Cosh, *et al*, 1998 and Tung-Chun, 2001). As the companies selected in the study were the most profitable in Malaysia, theoretically, their TNA practices should be systematic and formal. Whether or not this is the case can only be answered by the results of the study.

Out of the total population of 1000 companies, 27 per cent (278) companies were selected as the study samples. Based on Krejcie and Morgan's (1970; in Sekaran, 1992) sampling table (Appendix B), this amount was considered enough. The directory listed all the companies complete with their corporate addresses arranged alphabetically. The companies were randomly selected based on this list. In order to encourage participation from these companies, the researchers promised a strict confidentiality of the companies' identities. Therefore, the list of the selected companies is not revealed in this writing.

4.4 Data Collection

Questionnaires were manually mailed to the samples and addressed to the Human Resource Director / Manager of the companies. A cover letter was attached explaining the purposes of the study and a request for the questionnaire to be completed by staff directly involved in making TNA decisions in their companies. In order to ease reply, self-addressed and stamped envelopes were also sent together with the questionnaires. As poor response rate is a common fear in conducting research, therefore, a small token was given to the samples as complimentary gifts as well as holding a lucky draw contest. Respondents could also receive a free summary of the study findings by contacting the researchers.

All questionnaires were mailed at the end of February 2005 and respondents were given three weeks to complete and return the questionnaires. However, some questionnaires were undelivered as some had moved, changed ownership / name, etc. For these cases, these companies were replaced by other companies not originally selected as samples. Questionnaires for these companies were sent in batches from March to April 2005. Due to the slow response, the deadline to return the questionnaire was extended in order to allow

the respondents to participate in the study. Collection stopped at the end of May 2005, approximately three months after the data collection process was started.

4.5 Study Instrument

Questionnaires were used as the only instrument to collect data for the study. This decision was made for two reasons. Firstly, the purpose of the study was descriptive in nature. Therefore, a quantitative instrument was thought to be appropriate to achieve the study objectives. Secondly, the study involved quite a large number of samples, therefore, questionnaire were the most economical and practical instrument to gather data.

Several approaches were used to develop the survey questionnaire. First, questionnaires used in previous studies were reviewed and modified to suit the study context. Examples of previous research referred to were O'Driscoll and Taylor (1992); Agnaia (1996); Gray, *et al* (1997) and Elbadri (2001). Second, general TNA literatures were referred for guidelines to develop items that were not covered in the studies mentioned earlier. Third, a draft of the questionnaire was also reviewed by a consultant / trainer experienced in the TNA field. Comments from this person were used as guidelines to improve the instrument.

As mentioned earlier, it was made clear in the questionnaire cover letter that only staff directly involved in making TNA decisions should fill the questionnaire. This was stressed because it was felt that these people could provide the most accurate information regarding their organization's TNA practices. Most of the questions in the survey were also worded in the past tense to ensure that the data provided represented a more accurate picture of their organizations' past practices.

The questionnaire was divided into seven sections (Section A – G). Each section was designed to achieve the study objectives as stated in Chapter 1. A sample of the questionnaire is shown in Appendix C. A summary of the questionnaire items is presented in Table 5.

Sections	Descriptions	No. of Questions
A	Background of Organization	8
B	Background of Respondent	7
C	Nature of Training Needs	2
D	Selection of Training and Participants	5
E	Data Collection Methods	4
F	Perceptions on TNA Practice	5
G	Other Information	1
	Total Items	32

Table 5: Questionnaire Sections and Items

4.5.1 Section A – Background of Organization

Section A consists of 8 close and open-ended items. They are summarized in the following table:

Items	Descriptions	Scales	References
A1	Organization sector	Nominal	Rozhan (1998); Elbadri (2001)
A2	Nationality of parent company	Nominal	-
A3	Number of employees	Interval	Elbadri ,2001
A4	Location of organization	Nominal	-
A5	Length of operation in Malaysia	Interval	-
A6	ISO certification	Nominal	Quazi and Jacobs (2004)
A7	Presence of a training unit in organization	Nominal	Tung-Chun (2001)
A8	Annual budget for training and development activities	Interval	Poon and Rozhan (2000)

Table 6: Descriptions of Items in Section A

Based on the above table, item A1 was included in the study based on claims that type of industry / sector influence the level of effort and commitment towards TNA (eg., Elbadri, 2001).

Item A3 was based on the same source. It was found that the larger the company, the more attention was paid on TNA, with smaller companies tending to neglect the exercise (Elbadri, 2001). Westhead and Storey (1997, in Tung-Chun, 2001) also suggested that smaller companies tended to give less training to their employees compared to larger companies.

Item A6 was justified based on Quazi and Jacobs' (2004) claim that ISO 9000 certification influenced companies' training and development activities, including having a significant positive impact on their TNA approaches.

Item A7 would provide relevant data about the organizations and their TNA practices. For example, Tung-Chun (2001) stated that training effectiveness was positively influenced if the organizations had specific units responsible for training-related matters. Therefore, it was assumed that companies who had a separate unit were more likely to pay attention to TNA.

Annual investment of training and development activities as questioned in item A8 was regarded as another one of the indicators for determining commitment that organizations have towards training in general (Poon and Rozhan, 2000).

The rest of the items in Section A were included to gain more understanding on the companies regarding their origin (A2), length of operation in Malaysia (A5) and to ease data collection monitoring by keeping track of the location of their companies (A4).

4.5.2 Section B – Background of Respondent

Section B was purposely designed for the study to identify the background knowledge of practitioners' in training and development. Respondents were provided with

seven open and close-ended questions. The following table is a summary of the items contained in Section B:

Items	Descriptions	Scales
B1	Job title	Ordinal
B2	Years of working experience in current job	Interval
B3	Relevant qualification in HRM / HRD / T & D	Nominal
B4	Attendance to TNA course(s)	Nominal
B5	Membership of management / HRM / HRD association	Nominal
B6	Subscription to relevant publications	Nominal
B7	Extent of knowledge enhancement efforts	Ordinal

Table 7: Descriptions of Items in Section B

As discussed in Chapter 2, knowledge possessed by practitioners is important in determining the theoretical practice of TNA. Lack of knowledge and expertise were suggested as the main reasons for not conducting TNA (Zakaria and Rozhan, 1993 in Poon and Rozhan, 2000). Section B, therefore, tried to discover the extent to which the staff responsible in performing TNA were competent and experienced through a series of questions (B2 – B4).

Item B5 – B7 were designed to discover the extent to which practitioners kept in touch with recent developments in their field of practice. Knowledge of practitioners is often believed to be outdated, tending to rely on what they learnt in school without keeping abreast of the changes (Dubin, 1976). As reviewed in Chapter 2, the body of theory and practice of TNA has undergone a lot of developments and better approaches / methods are being created to produce more effective and accurate analyzing needs. If Dubin's opinion represents a true picture of the knowledge level of practitioners, it may prove a stumbling block in promoting theoretical TNA practices.

4.5.3 Section C – Nature of Training Needs

Two questions were developed in Section C in order to identify the nature of training needs commonly offered by organizations. Five Likert-scale answer options were used and these range from *1 – Never, 2 – Rare, 3 – Seldom, 4 – Frequent and 5 – Always.* Ordinal scales were used for both questions.

Item C1 intended to discover the categories of TNA (reactive and proactive) previously conducted in the organizations. Nine sub-items were provided. 'Preparation for unexpected changes in the future' and 'fulfillment of employees' developmental needs' would indicate proactive TNA, while the rest of the sub-items would indicate reactive TNA.

Item C2 questioned the types of training provided by the organizations, and the categorization was based on Dubois and Rothwell (2004). Eight sub-items / types of training were provided namely: technical, compulsory, orientation, developmental, soft skill, refresher, qualifying, and remedial training.

4.5.4 Section D – Selection of Training and Participants

Five items were prepared to determine how training programs and training participants were selected in the organizations. They were mostly developed by referring to previous studies and literature on TNA. The measurement / scale used is similar to that of Section C.

Item D1 was to discover key individuals who initiated previous training ideas. Seven sub-items were provided including CEOs, general managers, human resource / training manager, training personnel, immediate supervisors, employees, and external consultants. This item was based on a research done by O'Driscoll and Taylor (1992) and a sub-item 'external consultants' was added to suit the study.

Item D2 was designed and modified from Agnaia (1996). Six sub-items were provided regarding common ways in which participants were selected for training in the

organizations. These methods were as follows: suggestion in performance appraisal, employees' own application, turn-taking system, instruction to attend from superiors, discussion with / nomination by supervisors, and chosen by colleagues to represent departments.

Item D3 was modified based on O'Driscoll's and Taylor's study. This item examined the extent of involvement of some individuals in selecting training participants. Seven sub-items were listed including CEOs, general managers, human resource / training managers, training personnel, immediate supervisors, participants, and employees' colleagues / peers.

Item D4 dealt with factors the organizations usually considered in selecting training participants. Eight factors were listed, based mostly on a study conducted by Agnaia (1996). The sub-items were position, participant's willingness, boss / supervisor's views and approval, level of performance, academic qualification, length of service, participants' preference and availability.

The final item in Section D (item 5) listed five sub-items comprising levels of job categories in organizations. Respondents were requested to state the extent to which each job category was prioritized as potential candidates for training. This item was developed for the purpose of this research and the job categories were adapted from Mosley, *et al* (2005).

4.5.5 Section E – Data Collection Methods

Section E consisted of four items mostly developed based on previous studies and references to relevant literatures. This section was necessary to achieve the third objective of the study which was to identify data gathering methods used by the organizations in their organizational TNA practices. Same ordinal scale as Section C and D was used.

Item E1 determined the methods used to gather TNA data. 11 sub-items were listed based on references such as McClelland (1994 *i,ii and iii*); Brown (2002); Goldstein and Ford (2001); and Abdul Kadir (2001). These methods were on-site observations, questionnaire

surveys, individual interviews, performance appraisal forms, focus groups, document reviews, the Delphi method, brainstorming, assessment centers, advisory committees, and skills, knowledge and abilities tests.

The study also tried to discover the criteria that the organizations considered when selecting TNA data gathering methods. Item E2 was constructed to achieve this purpose. 13 sub-items were provided based on Gray, *et al's* study (1997) and Steadham (1990, in Ulschak, 1993). The criteria were top management preference, employees' acceptance, ease of use, cost-effectiveness, organizational culture and values, time required, facilities available, degree of reliability and validity, confidentiality, desired outcomes, persons to be involved, availability and expertise of HR staff, and sample size.

Item E3 concerned the sources of data that the organizations referred to in TNA activities. 18 sub-items were identified from Moore and Dutton (1977) and Blanchard and Thacker (2004). These sub-items were divided into three categories: organizational level, operational level and individual level. Quantity of sub-items contained under each category were 9, 4 and 5 respectively.

The last item in Section E (item 4) was included to discover the techniques the organizations used to analyze training needs. A total of 14 sub-items were provided and they were also divided into the same tripartite levels of analysis as the previous item. Four techniques were listed to determine organizational level analysis. Five techniques were listed for both operational and individual analysis levels. Source of reference for all sub-items were taken from various literatures on training / TNA.

4.5.6 Section F – Perceptions on TNA Practice

Five statements were developed to discover the perceptions of respondents on their organizational TNA practices. Respondents were presented with six-Likert scale answer options: *1 – Strongly disagree, 2 – Disagree, 3 – Slightly disagree, 4 – Slightly agree, 5 – Agree, and 6 – Strongly agree.* The scale used was ordinal.

Two of the items (item F3 and F4) were taken from Gray, *et al* (1997) whereas the other three items were developed for the purpose of the study. Item F1 intended to discover whether TNA was emphasized in the organizations. Item F2 was to find out whether their training efforts were strategic. Such data is relevant to the context of TNA since TNA exercises will ensure that every training program contributes to the achievement of organizational objectives and needs.

Item F5 seeks to determine if TNA conducted in the organizations was able to differentiate between the needs / problems were caused by lack of SKAs or by other factors. Response to this item was important because the needs / problems could only be fulfilled / solved if organizations were absolutely sure they were caused by employees' lack of SKAs.

4.5.7 Section G – Other Information

Section G contained only one question and was created to provide qualitative data regarding difficulties / problems the respondents faced in conducting TNA activities in their organizations.

4.6 Methods of Data Analysis

Data obtained from the survey was analyzed quantitatively using the Statistical Package of Social Science. The methods of analysis used to achieve each of the study objectives are shown in Table 8.

No.	Objectives	Methods of Analysis
1	To identify nature of training needs commonly offered by organizations.	Descriptive Statistics (Frequencies and Percentages)
2	To determine means by which participants were selected for training.	
3	To identify data collection methods and techniques used in the TNA process.	
4	To determine level of perception regarding organizational TNA practices.	Descriptive Statistics (Frequencies, Percentages and Mean Scores)*
5	To compare TNA practices with organizational demographic characteristics.	Kruskal-Wallis and Mann-Whitney
6	To determine relationships between data collection methods and techniques used to perform TNA with the ISO certification and length of operation of organizations.	Spearman Correlation
7	To discover relationship between company size and size of training budget.	Pearson Correlation

** Perception levels:*

Highest value – Lowest value / No. of levels required
= 6 – 1 / 3 = 1.67
Difference between level + 1.67
Therefore,
Low level = 1.00 to 2.67
Medium level = 2.68 to 4.35
High level = 4.36 to 6.00

Table 8: Methods of Analysis

CHAPTER 5
ANALYSIS OF DATA

5.1 Introduction

Out of two hundred and seventy-eight questionnaires distributed to respondents, eighty-four questionnaires were returned which is equivalent to 30.3 per cent. This amount is considered acceptable according to Sekaran (1992) and Diamantopoulos and Schlegelmilch (1997).

This chapter presents data findings arranged according to every section in the questionnaire. The data are analyzed using statistical procedures as discussed in the earlier chapter.

5.2 Data Analysis Used in the Study

One of the objectives of this study was to compare TNA practices between organizations of different demographic background and to determine relationships of certain variables. Due to the nature of the data, non-parametric statistical tests, particularly Kruskal Wallis, Mann-Whittney U and Spearman Correlation, were chosen to analyze the data (Zukarnain and Hishamuddin, 2001).

5.3 Section A: Background of Organization

5.3.1 Organization Sector

Sectors	*f*	%
Agriculture, forestry and fishing	3	3.6
Mining and quarrying	0	0.0
Manufacturing	51	60.7
Construction	2	2.4
Transport, storage and communication	1	1.2
Finance, insurance, business services and real estate	2	2.4
Other sector	25	29.8
TOTAL	84	100.0

Table 9: Organization Sector

As mentioned in Chapter 4, samples for the study were selected randomly. However, as shown in the above table, the majority of the respondent companies belong to the manufacturing sector (60.7%). This figure is probably because many of the companies listed in the Top 1000 in Malaysia are actually manufacturing companies. Therefore, they automatically have a higher chance of being randomly picked as study samples. The second highest number of respondents (29.8%) identified their companies as belonging to other sectors like retail / wholesale, information technology, trading, power generation, and pharmaceutical.

5.3.2 Nationality of Parent Company

As shown in Table 10, parent companies of the respondents are predominantly local companies (50.0%). Japanese companies make up the second biggest group with 22.6%.

Nationality of Parent	*f*	%
Malaysian	42	50.0
American	6	7.1
Anglo-Dutch	1	1.2
German	4	4.8
Japanese	19	22.6
Taiwanese	3	3.6
Other	9	10.7
TOTAL	84	100.0

Table 10: Nationality of Parent Company

5.3.3 Number of Employees

Number of Employees	*f*	%
0 – 99	4	4.8
100 – 499	26	31.0
500 – 999	17	20.2
1000 – 4999	30	35.7
5000 or more	7	8.3
TOTAL	84	100.0

Table 11: Number of Employees

Information regarding the number of employees was made open-ended in the questionnaire. The answers were then categorized into five divisions as shown above. It can be said that the majority of the firms involved in the survey have large quantities of manpower (1000 – 4999 employees, 35.7%). 31% of the firms have 100 – 499 employees. And 20.2% of the respondents are companies with 500 – 999 employees. As the above table shows, most of the firms in the survey can be considered quite large companies as only 4 (4.8%) firms have less than 100 employees.

5.3.4 Location of Organization

Locations	*f*	%
Johore	18	21.4
Malacca	3	3.6
Negeri Sembilan	3	3.6
Kuala Lumpur	20	23.8
Selangor	22	26.2
Perak	5	6.0
Pulau Pinang	8	9.5
Kelantan	1	1.2
Terengganu	1	1.2
Sabah	1	1.2
Sarawak	2	2.4
TOTAL	84	100.0

Table 12: Locations of Organizations

Samples selected in the study consisted of companies from all over Malaysia. However, the three states with the highest number of firms were Selangor (26.2%), Kuala Lumpur (23.8%) and Johore (21.4%). This can be explained by the location of most the industrial zones in Malaysia being concentrated in these three states.

5.3.5 Years of Operation in Malaysia

When combined, the majority of the firms that responded to the questionnaires have been in business for 11 to 40 years (75.0%). 12 firms (14.3%) have been operating for 10 years or less. 6 firms (7.1%) have been around for 41 to 50 years, and only 2 firms (2.4%) are 51 or more years of age. Table 13 shows this findings.

Years of Operation	*f*	%
0 – 10	12	14.3
11 – 20	33	39.3
21 – 30	18	21.4
31 – 40	12	14.3
41 – 50	6	7.1
51 – 60	1	1.2
71 – 80	1	1.2
81 and more	1	1.2
TOTAL	84	100.0

Table 13: Years of Operations

5.3.6 ISO Certification

Answers	*f*	%
With ISO Certificate	64	76.2
Without ISO Certificate	19	22.6
Missing Value	1	1.2
TOTAL	84	100.0

Table 14: ISO Certification

Organizations with ISO certificates makes up a bigger percentage of the respondents (76.2%) compared to those who do not have such certification (22.6%).

5.3.7 Presence of a Unit Handling Training Matters

Answers	*f*	%
With a Training Unit	72	85.7
Without a Training Unit	12	14.3
TOTAL	84	100.0

Table 15: Training Unit

The firms were asked whether they had a specific unit in charge of handling training-related matters. This could be in the form of human resource departments / sections or training units. A positive response was gathered as the majority of the firms answered 'yes' (85.7%), while the rest answered 'no' to the question. Those without a specific unit mentioned units like administration or quality control sections that were responsible for handling their staff training matters.

5.3.8 Budget for Training and Development Activities

Training Budget (RM)	*f*	%
Lowest – 49,000	16	19.0
50,000 – 99,000	6	7.1
100,000 – 499,000	30	35.7
500,000 – 999,000	3	3.6
1 – 4.9 million	12	14.3
5 million and more	3	3.6
Missing Value	14	16.7
TOTAL	84	100.0

Table 16: Budget for Training and Development

The answers regarding quantity of money allocated for training and development activities have been categorized into 6 groups as shown above. The majority of the firms had set aside approximately RM100,000 to 499,000 for the activities in a year. 15 companies (17.9%) allocated more than RM1 million for training funds. However, the number of companies with less than RM49,000 training budget per year was also quite large (19.0%).

5.4 Section B: Background of Respondent

5.4.1 Titles of Position

In the cover page of the questionnaires, it was emphasized that the survey should be answered by an organization's staff particularly in charge of handling training related matters

or involved in making training related decisions. This was to ensure that the data source / respondent was someone credible. To further confirm this, respondents were also asked to state their job title.

Almost all respondents (96.4%) were directly involved in human resource / human resource development areas. Their positions ranged from group HR managers, development and recruitment managers, HR executives, HRD managers, senior executives, learning and development managers, etc. Only three respondents held positions not directly relevant to HRM / HRD fields and these positions were ISO coordinator, quality assurance executive and section head.

5.4.2 Working Experience in Current Job

Working Experience (years)	*f*	%
0 – 5	35	41.7
6 – 10	24	28.6
11 – 15	6	7.1
16 – 20	6	7.1
21 – 25	5	6.0
26 – 30	2	2.4
Missing Value	6	7.1
TOTAL	84	100.0

Table 17: Working Experience

The majority of individuals who answered the questionnaires were actually quite new to their job as 41.7% of them only had 5 years of working experience or less in their current position. 28.6% of them have been on the job for 6 to 10 years. Combined, only 70.3% of the respondents have less than 10 years of experience. This figure is considerably larger compared to a total of 22.6% for those who have between 11 to 30 years of experience in their current positions.

5.4.3 Qualification in HRM / HRD / Training and Development

Qualification	*f*	%
Yes	60	71.4
No	21	25.0
Missing Value	3	3.6
TOTAL	84	100.0

Table 18: Qualifications

The majority of respondents possessed qualifications relevant to their fields of practice such as HRM / HRD / training and development (71.4%). Only 21 (25.0%) of the respondents were without such qualification.

5.4.4 Attendance to TNA Course

Attendance to TNA Course	*f*	%
Yes	56	66.7
No	26	31.0
Missing Value	2	2.4
TOTAL	84	100.0

Table 19: Attendance to TNA Course

66.7% of the respondents informed that they had attended course(s) on how to conduct TNA. Although majority said so, the respondents who answered 'no' and those who refused to answer the question, if combined, make up about half the number of those who attended (33.4%).

5.4.5 Membership in Management / HRM / HRD Associations

Membership	*f*	%
Yes	28	33.3
No	52	61.9
Missing Value	4	4.8
TOTAL	84	100.0

Table 20: Professional Membership

The majority of the respondents (61.9%) are not members of any professional association related to management / HRM / HRD fields. Only 33.3% of them maintained a membership with such associations.

5.4.6 Subscription to Related Publications

Subscriptions	*f*	%
Yes	50	59.5
No	32	38.1
Missing Value	2	2.4
TOTAL	84	100.0

Table 21: Subscription to Publications

A more favourable response was received in terms of whether the respondents subscribed to publications such as magazines, journals, or periodicals relevant to their field of practice. A total of 59.5% did subscribe while 38.1% did not.

5.4.7 Extent of Knowledge Improvement

Knowledge improvement practices among the respondents were quite impressive. The majority of the respondents considered themselves to be 'frequent' (38.1%) or 'always' (35.7%) in improving their knowledge pertaining their field of practice but 19.0% stated

'seldom', while one person stated 'rare'. Excluding the respondents who refused to answer the question, none of the respondents stated that they had 'never' improved their level of knowledge.

Responses	*f*	%
Never	0	0.0
Rare	1	1.2
Seldom	16	19.0
Frequent	32	38.1
Always	30	35.7
Missing Value	5	6.0
TOTAL	84	100.0

Table 22: Knowledge Improvement

5.5 Section C: Nature of Training Needs

5.5.1 Reasons for Conducting TNA

Reasons		1 N	2 R	3 S	4 F	5 A
▪ fulfillment of employees' developmental needs.	*f*	2	3	8	39	31
	%	2.4	3.6	9.5	46.4	36.9
▪ employees' current performance deficiencies.	*f*	2	4	10	42	23
	%	2.4	4.8	11.9	50.0	27.4
▪ new employees (orientation).	*f*	4	6	12	24	35
	%	4.8	7.1	14.3	28.6	41.7
▪ compliance with laws and regulations.	*f*	4	7	15	28	26
	%	4.8	8.3	17.9	33.3	31.0
▪ new procedures.	*f*	5	5	14	35	20
	%	6.0	6.0	16.7	41.7	23.8
▪ new / altered organizational objectives.	*f*	6	5	17	29	21
	%	7.1	6.0	20.2	34.5	25.0
▪ introduction of new equipment.	*f*	7	12	16	25	19
	%	8.3	14.3	19.0	29.8	22.6
▪ creation of new jobs.	*f*	3	16	22	24	12
	%	3.6	19.0	26.2	28.6	14.3
▪ preparation for unexpected changes in the future.	*f*	5	11	27	27	9
	%	6.0	13.1	32.1	32.1	10.7

Table 23: Reasons for Conducting TNA

Table 23 shows reasons for why the surveyed organizations conducted their previous TNA. The development of employees was the most stated reason. Combining responses under options 'always' and 'frequent', 83.3% of the organizations conducted TNAs due to this reason. The subsequent most stated reasons were determination of employees' performance gaps and for the purpose of orientation programmes. Preparation for unexpected changes in the future was found to be the most uncommon reason for conducting TNA.

Respondents were also invited to state other reasons that had caused them to perform TNA in their organizations that were not on the list. Among the reasons stated were that TNA was conducted as part of the yearly planning to prepare the training calendar (3 respondents), in response to customer needs (1 respondent), as a result of job enlargement and company re-organization (1 respondent), and also due to ISO requirements (1 respondent).

5.5.2 Types of Training Provided

Types		1 N	2 R	3 S	4 F	5 A
▪ orientation (induction)	*f*	2	1	10	20	49
	%	2.4	1.2	11.9	23.8	58.3
▪ technical	*f*	0	4	5	40	34
	%	0.0	4.8	6.0	47.6	40.5
▪ developmental	*f*	1	0	18	38	26
	%	1.2	0.0	21.4	45.2	31.0
▪ compulsory	*f*	2	2	18	26	25
	%	2.4	2.4	21.4	31.0	29.8
▪ soft skill	*f*	1	0	23	38	19
	%	1.2	0.0	27.4	45.2	22.6
▪ refresher	*f*	1	7	31	28	14
	%	1.2	8.3	36.9	33.3	16.7
▪ remedial (to correct performance discrepancies)	*f*	3	5	29	32	9
	%	3.6	6.0	34.5	38.1	10.7
▪ qualifying (eg. for promotional purpose)	*f*	3	10	38	14	10
	%	3.6	11.9	45.2	16.7	11.9

Table 24: Types of Training Provided

In general, the top three types of training delivered by the organizations were orientation / induction training, technical training, and developmental training. Based on the responses of the 'always' category, the most common type of training offered was orientation training (58.3%). However, if combining the number of respondents who answered options 'frequent' and 'always', technical training headed the list by 6.2% more than those of orientation / induction training. The least type of training offered in the organizations was qualifying training which was normally offered to employees in order to be eligible for promotions.

Other types of training mentioned by the respondents were ISO awareness training (3 respondents), product training (2 respondents), and 1 respondent each for informative training, quality training and safety training.

5.6 Section D: Selection of Training and Participants

5.6.1 Initiation of Training Ideas

Individuals		1 N	2 R	3 S	4 F	5 A
▪ human resource / training manager	*f*	1	1	9	30	38
	%	1.2	1.2	10.7	35.7	45.2
▪ immediate supervisors	*f*	2	3	16	44	15
	%	2.4	3.6	19.0	52.4	17.9
▪ training personnel	*f*	3	3	10	35	22
	%	3.6	3.6	11.9	41.7	26.2
▪ general manager	*f*	5	5	25	22	21
	%	6.0	6.0	29.8	26.2	25.0
▪ CEO	*f*	7	7	28	20	18
	%	8.3	8.3	33.3	23.8	21.4
▪ Employees themselves	*f*	2	13	32	25	7
	%	2.4	15.5	38.1	29.8	8.3
▪ external consultants	*f*	11	22	28	13	3
	%	13.1	26.2	33.3	15.5	3.6

Table 25: Initiators of Training Ideas

Combining the number of respondents who answered 'always' and 'frequent', the three most important people who initiated training ideas in the organizations were human

resource / training managers (80.9%), immediate supervisors (70.3%), and training personnel (67.9%). External consultants had the lowest amount of involvement compared to the other parties.

Other parties involved in the initiation of training ideas not recorded in the list as mentioned by the respondents were training committees, store / departmental managers, company facilitators (regarded as subject-matter experts), and clerks. Each of the above was suggested by 1 respondent.

5.6.2 Common Ways for Participants Selection

Ways of Selection		1 N	2 R	3 S	4 F	5 A
▪ discussion and nomination with / by supervisors	*f*	1	0	10	45	25
	%	1.2	0.0	11.9	53.6	29.8
▪ suggestion in performance appraisal forms	*f*	4	6	13	33	25
	%	4.8	7.1	15.5	39.3	29.8
▪ employees were directed to attend by superiors	*f*	1	6	18	39	18
	%	1.2	7.1	21.4	46.4	21.4
▪ employees applied to attend	*f*	5	8	21	33	13
	%	6.0	9.5	25.0	39.3	15.5
▪ based on a turn-taking system	*f*	9	19	32	15	3
	%	10.7	22.6	38.1	17.9	3.6
▪ employees were chosen by their colleagues to represent their departments	*f*	18	29	24	5	3
	%	21.4	34.5	28.6	6.0	3.6

Table 26: Common Ways for Participants Selection

The majority of the organizations stated that they selected participants for training by having employees and their immediate supervisors discuss and provide nominations. The next popular ways were by referring to performance appraisal forms and directions from superiors. Peer nomination was the least common way in making participant selection decisions.

5.6.3 Recommendations of Training Participants

Individuals		1 N	2 R	3 S	4 F	5 A
▪ immediate supervisors	*f*	0	3	10	38	30
	%	0.0	3.6	11.9	45.2	35.7
▪ human resource / training manager	*f*	2	4	15	31	28
	%	2.4	4.8	17.9	36.9	33.3
▪ training personnel	*f*	4	6	19	29	18
	%	4.8	7.1	22.6	34.5	21.4
▪ general manager	*f*	6	14	19	26	13
	%	7.1	16.7	22.6	31.0	15.5
▪ participants (self-nomination)	*f*	3	13	28	29	4
	%	3.6	15.5	33.3	34.5	4.8
▪ CEO	*f*	12	16	22	19	8
	%	14.3	19.0	26.2	22.6	9.5
▪ employees' colleagues / peers	*f*	13	29	26	6	2
	%	15.5	34.5	31.0	7.1	2.4

Table 27: Recommendations of Training Participants

A few parties who might be involved in suggesting names for potential training participants were listed. The study found that recommendations of training participants mostly came from immediate supervisors. If both options 'always' and 'frequent' are combined, 80.9% of the firms reported this practice. The other common parties were, in sequence, human resource / training managers, training personnel and general managers. Employees' colleagues / peers were the least likely parties to recommend names. Other parties not in the survey but mentioned by the companies were heads of department and store / departmental managers (both 1 respondent).

5.6.4 Factors Considered in Participants Selection

The most important factor considered in participants' selection was approvals / views from bosses / supervisors. 85.7% of the firms said that they 'always' and 'frequent' considered this factor. Subsequent factors also considered important by the firms were employees' level of performance, position, availability, as well as their willingness to attend training programmes. Table 28 shows this finding.

Selection Factors		1 N	2 R	3 S	4 F	5 A
▪ boss / supervisor's views & approval	*f*	2	0	7	37	35
	%	2.4	0.0	8.3	44.0	41.7
▪ level of performance	*f*	0	1	10	48	19
	%	0.0	1.2	11.9	57.1	22.6
▪ position	*f*	1	4	18	40	16
	%	1.2	4.8	21.4	47.6	19.0
▪ availability	*f*	5	9	21	30	14
	%	6.0	10.7	25.0	35.7	16.7
▪ participants' willingness	*f*	8	9	25	31	4
	%	9.5	10.7	29.8	36.9	4.8
▪ length of service	*f*	11	11	22	24	9
	%	13.1	13.1	26.2	28.6	10.7
▪ academic qualification	*f*	7	13	31	23	2
	%	8.3	15.5	36.9	27.4	2.4
▪ participants' preference	*f*	5	22	30	16	3
	%	6.0	26.2	35.7	19.0	3.6

Table 28: Factors considered in Participants Selection

5.6.5 Priority of Candidates according to Job Categories

Job Categories		1 N	2 R	3 S	4 F	5 A
▪ Supervisory	*f*	1	0	14	43	23
	%	1.2	0.0	16.7	51.2	27.4
▪ Management	*f*	1	3	16	42	18
	%	1.2	3.6	19.0	50.0	21.4
▪ Professional	*f*	3	5	19	37	14
	%	3.6	6.0	22.6	44.0	16.7
▪ Lower level management	*f*	3	10	24	33	8
	%	3.6	11.9	28.6	39.3	9.5
▪ Clerical	*f*	3	11	31	29	6
	%	3.6	13.1	36.9	34.5	7.1

Table 29: Priority of Candidates according to Job Categories

Employees at supervisory level received the highest priority as training candidates. This is followed by other levels namely management, professional, lower level management and finally clerical employees. There were also cases (2 respondents) whereby respondents chose similar answer options for all categories and stated that their companies treated all groups as equal.

5.7 Section E: Data Collection Methods

5.7.1 Data Collection Methods

Methods		1 N	2 R	3 S	4 F	5 A
▪ performance appraisal forms	*f*	2	1	15	30	34
	%	2.4	1.2	17.9	35.7	40.5
▪ questionnaire surveys	*f*	6	8	21	23	19
	%	7.1	9.5	25.0	27.4	22.6
▪ on-site observations	*f*	6	5	20	38	10
	%	7.1	6.0	23.8	45.2	11.9
▪ individual interviews	*f*	7	13	15	33	9
	%	8.3	15.5	17.9	39.3	10.7
▪ focus groups	*f*	5	10	28	23	10
	%	6.0	11.9	33.3	27.4	11.9
▪ skills, knowledge and abilities (SKAs) tests	*f*	9	7	26	22	13
	%	10.7	8.3	31.0	26.2	15.5
▪ brainstorming	*f*	11	9	28	23	5
	%	13.1	10.7	33.3	27.4	6.0
▪ document reviews / examinations	*f*	10	15	27	21	2
	%	11.9	17.9	32.1	25.0	2.4
▪ advisory committees	*f*	15	18	19	20	3
	%	17.9	21.4	22.6	23.8	3.6
▪ assessment centers	*f*	13	19	24	14	4
	%	15.5	22.6	28.6	16.7	4.8
▪ delphi method	*f*	21	17	22	9	1
	%	25.0	20.2	26.2	10.7	1.2

Table 30: Data Collection Methods

The most popular method used to collect TNA data was the performance appraisal forms (40.5% of the organizations stated this practice as 'always'). Besides that, other methods also commonly used were questionnaire surveys, observations, and individual interviews. One respondent mentioned the use of what they referred as the 'buddy system' in gathering TNA data in their organization and rated the use of this method as 'frequent'.

5.7.2 Criteria Considered in the Selection of Data Collection Methods

Criteria		1 N	2 R	3 S	4 F	5 A
▪ desired outcomes	*f*	0	5	15	25	34
	%	0.0	6.0	17.9	29.8	40.5
▪ organizational culture and values	*f*	0	1	16	37	26
	%	0.0	1.2	19.0	44.0	31.0
▪ cost-effectiveness	*f*	2	2	14	38	23
	%	2.4	2.4	16.7	45.2	27.4
▪ persons to be involved	*f*	2	1	19	37	17
	%	2.4	1.2	22.6	44.0	20.2
▪ time required	*f*	2	2	22	34	19
	%	2.4	2.4	26.2	40.5	22.6
▪ degree of reliability and validity required	*f*	1	6	16	36	16
	%	1.2	7.1	19.0	42.9	19.0
▪ top management preference	*f*	2	9	17	32	17
	%	2.4	10.7	20.2	38.1	20.2
▪ facilities available	*f*	3	8	17	35	15
	%	3.6	9.5	20.2	41.7	17.9
▪ ease of use	*f*	2	8	22	33	11
	%	2.4	9.5	26.2	39.3	13.1
▪ availability and expertise of HR staff	*f*	5	3	26	31	12
	%	6.0	3.6	31.0	36.9	14.3
▪ employees' acceptance	*f*	4	7	32	25	6
	%	4.8	8.3	38.1	29.8	7.1
▪ confidentiality	*f*	5	13	23	25	9
	%	6.0	15.5	27.4	29.8	10.7
▪ sample size	*f*	6	13	25	23	7
	%	7.1	15.5	29.8	27.4	8.3

Table 31: Criteria Considered in the Selection of Data Collection Methods

If looking at the number of respondents who chose option 'always', the desired outcome from a TNA activity was regarded as the most important criteria for them in choosing data collection methods (70.3%). However, if responses of options 'always' and 'frequent' are combined, the most important criteria considered by most of the organizations was organizational culture and values (75.0%).

5.7.3 Data Sources Referred to in TNA Activities

Sources of Data		1 N	2 R	3 S	4 F	5 A
a) Organizational level						
▪ organizational goals and objectives	*f*	0	1	6	33	42
	%	0.0	1.2	7.1	39.3	50.0
▪ skills inventory	*f*	0	2	12	48	21
	%	0.0	2.4	14.3	57.1	25.0
▪ analysis of efficiency indices (eg.	*f*	0	1	18	39	21
product quality, customer complaints)	%	0.0	1.2	21.4	46.4	25.0
▪ management request / mandate	*f*	0	1	18	46	15
	%	0.0	1.2	21.4	54.8	17.9
▪ current trends in industry	*f*	1	6	16	34	22
	%	1.2	7.1	19.0	40.5	26.2
▪ changes in system or sub-system	*f*	2	4	18	40	16
	%	2.4	4.8	21.4	47.6	19.0
▪ organizational climate indices (eg.	*f*	2	3	22	35	17
turnover, absenteeism, accidents, etc.)	%	2.4	3.6	26.2	41.7	20.2
▪ manpower inventory	*f*	1	3	26	38	10
	%	1.2	3.6	31.0	45.2	11.9
▪ competitor's training practices	*f*	5	14	35	19	2
	%	6.0	16.7	41.7	22.6	2.4
b) Operational level						
▪ performance standards	*f*	0	0	12	39	32
	%	0.0	0.0	14.3	46.4	38.1
▪ job descriptions	*f*	0	1	15	38	29
	%	0.0	1.2	17.9	45.2	34.5
▪ job specifications	*f*	0	2	16	38	25
	%	0.0	2.4	19.0	45.2	29.8
▪ relevant literature concerning the job	*f*	3	5	28	32	9
	%	3.6	6.0	33.3	38.1	10.7
c) Individual level						
▪ performance appraisal data	*f*	1	2	13	34	33
	%	1.2	2.4	15.5	40.5	39.3
▪ supervisor's suggestions	*f*	0	3	15	38	27
	%	0.0	3.6	17.9	45.2	32.1
▪ skills, knowledge and abilities (SKAs)	*f*	4	3	11	43	21
tests results	%	4.8	3.6	13.1	51.2	25.0
▪ attitude surveys	*f*	8	8	30	25	6
	%	9.5	9.5	35.7	29.8	7.1
▪ assessment centers	*f*	11	14	30	18	5
	%	13.1	16.7	35.7	21.4	6.0

Table 32: Sources of Data Referred in TNA Process

Based on the table, the most important source of data the organizations referred to when conducting organizational-level TNA was their organizational goals and objectives. As for operational level, the most referred data source was performance standards. And finally, when conducting individual level analysis, the organizations mostly referred to employees' performance appraisal data followed by suggestions of supervisors.

5.7.4 TNA Techniques Used

Techniques		1 N	2 R	3 S	4 F	5 A
a) Organizational level						
▪ SWOT analysis	*f*	3	5	14	42	14
	%	3.6	6.0	16.7	50.0	16.7
▪ organizational scanning	*f*	3	7	21	38	8
	%	3.6	8.3	25.0	45.2	9.5
▪ balanced scorecard	*f*	13	8	20	25	9
	%	15.5	9.5	23.8	29.8	10.7
▪ PEST analysis	*f*	18	15	25	16	1
	%	21.4	17.9	29.8	19.0	1.2
b) Operational level						
▪ Task/ knowledge, skills, abilities (KSA) analysis	*f*	1	1	13	41	26
	%	1.2	1.2	15.5	48.8	31.0
▪ Competency analysis	*f*	0	4	16	39	22
	%	0.0	4.8	19.0	46.4	26.2
▪ job analysis	*f*	0	2	18	45	14
	%	0.0	2.4	21.4	53.6	16.7
▪ skills inventory	*f*	1	3	24	31	18
	%	1.2	3.6	28.6	36.9	21.4
▪ managerial skills audit	*f*	1	6	28	35	5
	%	1.2	7.1	33.3	41.7	6.0
c) Individual Level						
▪ performance review / appraisal	*f*	0	1	9	36	37
	%	0.0	1.2	10.7	42.9	44.0
▪ critical incident	*f*	6	12	25	27	7
	%	7.1	14.3	29.8	32.1	8.3
▪ repertory grid analysis	*f*	15	11	30	17	2
	%	17.9	13.1	35.7	20.2	2.4
▪ versatility chart / analysis	*f*	15	13	31	16	1
	%	17.9	15.5	36.9	19.0	1.2
▪ diary analysis	*f*	16	14	33	11	1
	%	19.0	16.7	39.3	13.1	1.2

Table 33: Techniques Used in TNA

Compared to the other techniques to analyze training needs at organizational level, SWOT analysis was the most widely used by the organizations. Task / KSA analysis was the most popular technique when conducting operational level analysis. And finally at the individual level, the majority of the organizations used performance review / appraisal technique compared to the rest of the techniques listed.

5.8 Section F: Perceptions on TNA Practice

Statements		1 StD	2 D	3 SlD	4 SlA	5 A	6 StA	Mean
1. TNA stage is emphasized in your organization's training practices to ensure training effectiveness.	*f*	0	3	5	9	33	33	5.06
	%	0.0	3.6	6.0	10.7	39.3	39.3	
2. Training needs will only be fulfilled if they are in line with your organizational strategic needs.	*f*	0	2	2	7	33	38	5.26
	%	0.0	2.4	2.4	8.3	39.3	45.2	
3. TNA methods used by your organization produce clear, relevant, specific data on performance discrepancies.	*f*	0	2	7	27	34	13	4.59
	%	0.0	2.4	8.3	32.1	40.5	15.5	
4. TNA methods used by your organization make it possible to distinguish between training that employees *need* to perform their jobs and training that they *want* but do not need to perform their jobs.	*f*	0	5	7	22	35	14	4.55
	%	0.0	6.0	8.3	26.2	41.7	16.7	
5. TNA conducted in your organization is able to differentiate performance problems caused by employees' lack of skills, knowledge and abilities (SKAs) and problems caused by other factors.	*f*	1	1	10	25	34	12	4.52
	%	1.2	1.2	11.9	29.8	40.5	14.3	

Table 34: Perceptions towards TNA Practices

Five statements were provided to determine the respondent's perceptions regarding TNA practices in their respective organizations. Based on the mean values of each statement, it can be concluded that their perceptions toward organizational practices are high (see Chapter 4 for level indicators). The respondents felt that the TNA step received considerable emphasis in their organizations to ensure that training activities they conducted were effective. 78.6% of the respondents 'strongly agreed' and 'agreed' with the statement. They also thought that only needs that could help the firms to achieve their strategic needs were fulfilled (84.5% ticked 'strongly agree' and 'agree' options).

For statements number 3, 4 and 5, mixed results were found. Although the numbers of respondents who 'strongly agreed' and 'agreed' with all three statements were higher than the rest of the groups, however when examined closely, respondents who chose the option 'slightly agree' were also quite high. This could mean that the respondents were probably not sure whether TNA methods used in their organizations were able to meet the stated criteria (statement 3), could distinguish training 'needs' and training 'wants' (statement 4), and whether a fine line was drawn between performance problems caused by SKAs deficiencies or whether they originated by other factors (statement 5).

5.9 Reasons for Conducting TNA and Demographic Variables

5.9.1 Reasons for TNA and Organization Sector

Table 35 shows that there are no significant differences among organizational sectors in terms of their reasons for conducting TNA.

Reasons	Test Statistics (Kruskal Wallis Test, Grouping Variable: Sector)		
	$\chi 2$	df	Asymp.Sig.
▪ introduction of new equipment.	4.961	5	.421
▪ new / altered organizational objectives.	4.651	5	.460
▪ new procedures.	10.208	5	.070
▪ new employees (orientation).	3.981	5	.552
▪ creation of new jobs.	2.892	5	.717
▪ compliance with laws and regulations.	2.112	5	.833
▪ preparation for unexpected changes in the future.	1.616	5	.899
▪ fulfillment of employees' developmental needs.	9.681	5	.085
▪ employees' current performance deficiencies.	3.863	5	.569

Value of significance $p \leq 0.05$

Table 35: Analysis of Differences (Reasons for TNA and Organizational Sectors)

5.9.2 Reasons for TNA and Nationality of Parent Company

Reasons	Test Statistics (Kruskal Wallis Test, Grouping Variable: Parent)		
	$\chi 2$	df	Asymp.Sig.
▪ introduction of new equipment.	5.375	6	.497
▪ new / altered organizational objectives.	5.984	6	.425
▪ new procedures.	4.019	6	.674
▪ new employees (orientation).	4.371	6	.627
▪ creation of new jobs.	4.384	6	.625
▪ compliance with laws and regulations.	2.170	6	.903
▪ preparation for unexpected changes in the future.	4.015	6	.675
▪ fulfillment of employees' developmental needs.	3.348	6	.764
▪ employees' current performance deficiencies.	2.729	6	.834

Value of significance $p \leq 0.05$

Table 36: Analysis of Differences (Reasons for TNA and Nationality of Parent Company)

Table 36 shows that there were no significant differences between organizations of different parent companies' nationalities with regards to their reasons for performing TNA.

5.10 Types of Training and Demographic Variables

5.10.1 Types of Training and Organization Sector

Types	Test Statistics (Kruskal Wallis Test, Grouping Variable: Sector)		
	$\chi 2$	df	Asymp.Sig.
▪ technical	8.202	5	.145
▪ compulsory	4.467	5	.484
▪ orientation (induction)	4.638	5	.462
▪ developmental	3.747	5	.586
▪ soft skill	3.153	5	.676
▪ refresher	2.967	5	.705
▪ qualifying (eg. for promotional purpose)	4.618	4	.329
▪ remedial (to correct performance discrepancies)	2.369	4	.668

Value of significance $p \leq 0.05$

Table 37: Analysis of Differences (Types of Training and Organizational Sectors)

The Kruskal-Wallis analysis also showed that there were no significant differences between the types of training conducted by organizations of dissimilar sectors.

5.10.2 Types of Training and Nationality of Parent Company

Table 38 is referred. Overall, there are no significant differences in terms of the training types offered by the companies of different parent origin. However, in the case of soft skill training, nationality of parent company does play a part (a significant level of .014).

Types	Test Statistics (Kruskal Wallis Test, Grouping Variable: Parent)		
	$\chi 2$	df	Asymp.Sig.
▪ technical	10.286	6	.113
▪ compulsory	5.414	6	.492
▪ orientation (induction)	5.849	6	.440
▪ developmental	7.027	6	.318
▪ **soft skill**	**16.007**	**6**	**.014**
▪ refresher	5.790	6	.447
▪ qualifying (eg. for promotional purpose)	3.252	6	.777
▪ remedial (to correct performance discrepancies)	2.994	6	.810

Value of significance $p \leq 0.05$

Table 38: Analysis of Differences (Types of Training and Nationality of Parent Company)

5.11 Data Collection Methods and Demographic Variables

5.11.1 Data Collection Methods and Organization Sector

Data Collection Methods	Test Statistics (Kruskal Wallis Test, Grouping Variable: Sector)		
	$\chi 2$	df	Asymp.Sig.
▪ on-site observations	6.788	5	.237
▪ questionnaire surveys	4.061	5	.541
▪ individual interviews	8.426	5	.134
▪ performance appraisal forms	5.188	5	.393
▪ focus groups	3.035	5	.695
▪ document reviews / examinations	6.543	5	.257
▪ delphi method	5.293	5	.381
▪ brainstorming	4.809	5	.440
▪ assessment centers	4.146	5	.529
▪ advisory committees	5.888	5	.317
▪ skills, knowledge and abilities (SKAs) tests	3.768	5	.583

Value of significance $p \leq 0.05$

Table 39: Analysis of Differences (Data Collection Methods and Organizational Sectors)

There were no significant differences regarding data collection methods used by the organizations of different sectors.

5.11.2 Data Collection Methods and Nationality of Parent Company

Data Collection Methods	Test Statistics (Kruskal Wallis Test, Grouping Variable: Parent		
	$\chi 2$	df	Asymp.Sig.
▪ on-site observations	9.777	6	.134
▪ **questionnaire surveys**	**23.138**	**6**	**.001**
▪ individual interviews	6.630	6	.356
▪ performance appraisal forms	3.876	6	.693
▪ focus groups	9.165	6	.165
▪ document reviews / examinations	6.533	6	.366
▪ delphi method	3.586	6	.733
▪ brainstorming	6.545	6	.365
▪ assessment centers	3.585	6	.733
▪ **advisory committees**	**12.935**	**6**	**.044**
▪ skills, knowledge and abilities (SKAs) tests	5.761	6	.450

Value of significance $p \leq 0.05$

Table 40: Analysis of Differences
(Data Collection Methods and Nationality of Parent Company)

Table 40 is referred. Out of 11 data collection methods listed in the survey, the nationality of the parent company significantly affects the use of only two data collection methods i.e. questionnaire surveys (.001) and advisory committees (.044).

5.11.3 Data Collection Methods and Presence of Training Unit

Table 41 is referred. The results employing Mann-Whitney *U* analysis show that there were no significant differences between the methods used to gather TNA data with and without the presence of training units in the organizations.

Data Collection Methods	Test Statistics (Grouping Variable: Training Unit)			
	Mann-Whitney *U*	Wilcoxon W	Z	Asymp.Sig. (2-tailed)
▪ on-site observations	279.000	2694.000	-1.043	.297
▪ questionnaire surveys	224.000	279.000	-1.738	.082
▪ individual interviews	203.000	258.000	-2.100	.036
▪ performance appraisal forms	363.000	429.000	--0.400	.689
▪ focus groups	225.000	280.000	-1.684	.092
▪ document reviews / examinations	307.500	362.500	-0.284	.776
▪ Delphi method	245.500	290.500	-0.529	.597
▪ Brainstorming	231.500	286.500	-1.580	.114
▪ assessment centers	308.000	2388.000	-0.196	.845
▪ advisory committees	305.000	360.000	-0.321	.748
▪ skills, knowledge and abilities (SKAs) tests	282.000	348.000	-1.222	.222

Value of significance $p \leq 0.05$

Table 41: Analysis of Differences (Data Collection Methods and Presence of Training Unit)

5.11.4 Data Collection Methods and Size of Training Budget

Data Collection Methods	Test Statistics (Kruskal Wallis Test, Grouping Variable: Training Budget)		
	$\chi 2$	df	Asymp.Sig.
▪ On-site observations	3.944	5	.557
▪ questionnaire surveys	10.612	5	.060
▪ individual interviews	6.337	5	.275
▪ performance appraisal forms	3.119	5	.682
▪ focus groups	7.476	5	.188
▪ document reviews / examinations	5.416	5	.367
▪ delphi method	3.980	5	.552
▪ brainstorming	7.498	5	.186
▪ assessment centers	4.304	5	.507
▪ advisory committees	5.619	5	.345
▪ skills, knowledge and abilities (SKAs) tests	7.023	5	.219

Value of significance $p \leq 0.05$

Table 42: Analysis of Differences (Data Collection Methods and Size of Training Budget)

There were also no significant differences between the adoption of data collection methods and the size of training budgets allocated in the organizations.

5.11.5 Data Collection Methods and Size of Organization

Data Collection Methods	Test Statistics (Kruskal Wallis Test, Grouping Variable: Company Size) Chi-Square	df	Asymp.Sig.
▪ on-site observations	5.379	4	.251
▪ questionnaire surveys	9.231	4	.056
▪ individual interviews	5.641	4	.228
▪ performance appraisal forms	3.847	4	.427
▪ focus groups	1.686	4	.793
▪ document reviews / examinations	2.565	4	.633
▪ delphi method	6.953	4	.138
▪ brainstorming	6.926	4	.140
▪ assessment centers	2.522	4	.641
▪ advisory committees	4.070	4	.397
▪ skills, knowledge and abilities (SKAs) tests	8.245	4	.083

Value of significance $p \leq 0.05$

Table 43: Analysis of Differences (Data Collection Methods and Size of Organization)

Similar to the previous finding, there were also no significant differences between adoption of methods with size of organization (based on number of employees).

5.12 TNA Techniques and Demographic Variables

5.12.1 TNA Techniques and Organization Sector

Table 44 is referred. The Kruskal-Wallis statistical test found no significant differences in all three-levels TNA techniques used by organizations of different sectors.

Techniques	Test Statistics (Kruskal Wallis Test, Grouping Variable: Sector)		
	Chi-Square	df	Asymp.Sig.
a) Organizational Level			
▪ organizational scanning	5.514	5	.356
▪ balanced scorecard	4.861	5	.433
▪ SWOT analysis	3.810	5	.577
▪ PEST analysis	6.030	5	.303
b) Operational Level			
▪ task/ knowledge, skills, abilities (KSA) analysis	6.676	5	.246
▪ job analysis	2.095	5	.836
▪ competency analysis	8.416	5	.135
▪ skills inventory	7.342	5	.196
▪ managerial skills audit	5.233	5	.388
c) Individual Level			
▪ performance review / appraisal	3.190	5	.671
▪ repertory grid analysis	4.176	5	.524
▪ versatility chart / analysis	2.999	5	.700
▪ diary analysis	2.633	5	.756
▪ critical incident	1.885	5	.865

Value of significance $p \leq 0.05$

Table 44: Analysis of Differences (TNA Techniques and Organizational Sectors)

5.12.2 TNA Techniques and Nationality of Parent Company

Table 45 is referred. Except for the competency analysis technique ($p = .012$), there were no significant differences in the techniques used to analyze training needs at all three levels of analysis with the nationality of parent companies.

Techniques	Test Statistics (Kruskal Wallis Test, Grouping Variable: Parent)		
	χ^2	df	Asymp.Sig.
a) Organizational Level			
▪ organizational scanning	9.503	6	.147
▪ balanced scorecard	7.165	6	.306
▪ SWOT analysis	4.910	6	.555
▪ PEST analysis	8.808	6	.185
b) Operational Level			
▪ task/ knowledge, skills, abilities (KSA) analysis	8.131	6	.229
▪ job analysis	6.362	6	.384
▪ **competency analysis**	**16.312**	**6**	**.012**
▪ skills inventory	9.937	6	.127
▪ managerial skills audit	7.743	6	.258
c) Individual Level			
▪ performance review / appraisal	2.916	6	.819
▪ repertory grid analysis	3.916	6	.687
▪ versatility chart / analysis	4.606	6	.595
▪ diary analysis	3.927	6	.687
▪ critical incident	12.181	6	.058

Value of significance $p \leq 0.05$

Table 45: Analysis of Differences (TNA Techniques and Nationality of Parent Company)

5.12.3 TNA Techniques and Presence of Training Unit

Table 46 is referred. Comparing organizations who had training units in their organizations with those who did not, significant differences were found on only three techniques namely SWOT analysis, competency analysis and managerial skills auditing. Significant values for these techniques were .021, .014 and .043 respectively. For the rest of the techniques, a training unit did not make any difference to their applications.

Techniques	Test Statistics (Grouping Variable: Training Unit)			
	Mann-Whitney *U*	Wilcoxon W	Z	Asymp.Sig. (2-tailed)
a) Organizational Level				
▪ organizational scanning	357.500	423.500	-.086	.931
▪ balanced scorecard	307.500	373.500	-.689	.491
▪ **SWOT analysis**	**221.500**	**287.500**	**-2.313**	**.021**
▪ PEST analysis	344.000	2424.000	-.124	.901
b) Operational Level				
▪ task/ knowledge, skills, abilities (KSA) analysis	302.500	368.500	-1.307	.191
▪ job analysis	322.000	388.000	-.824	.410
▪ **competency analysis**	**219.500**	**285.500**	**-2.459**	**.014**
▪ skills inventory	273.000	339.000	-1.387	.165
▪ **managerial skills audit**	**227.500**	**293.500**	**-2.028**	**.043**
c) Individual Level				
▪ performance review / appraisal	312.000	378.000	-1.239	.215
▪ repertory grid analysis	306.000	372.000	-.721	.471
▪ versatility chart / analysis	289.500	355.500	-1.052	.293
▪ diary analysis	287.000	353.000	-1.029	.304
▪ critical incident	297.500	363.500	-.995	.320

Value of significance $p \leq 0.05$

Table 46: Analysis of Differences (TNA Techniques and Presence of Training Unit)

5.12.4 TNA Techniques and Size of Training Budget

Table 47 is referred. Unlike the previous finding, the Kruskal Wallis statistical test found no significant differences between TNA techniques used with size of training budget allocated in the organizations.

Techniques	Test Statistics (Kruskal Wallis Test, Grouping Variable: Budget)		
	χ^2	df	Asymp.Sig.
a) Organizational Level			
▪ organizational scanning	4.218	5	.518
▪ balanced scorecard	8.135	5	.149
▪ SWOT analysis	4.492	5	.481
▪ PEST analysis	2.242	5	.815
b) Operational Level			
▪ task/ knowledge, skills, abilities (KSA) analysis	2.331	5	.802
▪ job analysis	1.732	5	.885
▪ competency analysis	4.035	5	.544
▪ skills inventory	.742	5	.981
▪ managerial skills audit	2.737	5	.740
c) Individual Level			
▪ performance review / appraisal	2.222	5	.818
▪ repertory grid analysis	2.668	5	.751
▪ versatility chart / analysis	2.695	5	.747
▪ diary analysis	1.002	5	.962
▪ critical incident	2.863	5	.721

Value of significance $p \leq 0.05$

Table 47: Analysis of Differences (TNA Techniques and Size of Training Budget)

5.12.5 TNA Techniques and Size of Organization

Table 48 shows that organizations of different sizes (based on number of employees) did not differ significantly in terms of their applications of TNA techniques at all three analysis levels.

Techniques	Test Statistics (Kruskal Wallis Test, Grouping Variable: Size)		
	χ^2	df	Asymp.Sig.
a) Organizational Level			
▪ organizational scanning	4.025	4	.403
▪ balanced scorecard	3.024	4	.554
▪ SWOT analysis	5.509	4	.239
▪ PEST analysis	7.853	4	.097
b) Operational Level			
▪ task/ knowledge, skills, abilities (KSA) analysis	5.317	4	.256
▪ job analysis	3.973	4	.410
▪ competency analysis	3.919	4	.417
▪ skills inventory	3.862	4	.425
▪ managerial skills audit	2.232	4	.693
c) Individual Level			
▪ performance review / appraisal	1.873	4	.759
▪ repertory grid analysis	4.823	4	.306
▪ versatility chart / analysis	3.237	4	.519
▪ diary analysis	2.207	4	.698
▪ critical incident	.835	4	.934

Value of significance $p \leq 0.05$

Table 48: Analysis of Differences (TNA Techniques and Size of Organization)

5.13 Relationship between Data Collection Methods with ISO Certification and Years of Operation

5.13.1 ISO Certification

The Spearman correlation analysis was used to determine whether ISO certificates influenced the kinds of methods used to collect TNA data. As shown in Table 49, a strongly inversed relationship was found between Delphi method and ISO certifications of organizations. A very low relationship (r =.031) was found between performance appraisal forms and companies' ISO certification. As for the rest of the methods, no significant relationships were found between the two variables.

Data Collection Methods	Spearman rho (r)	Relationship Analysis
▪ on-site observations	-.049	No relationship
▪ questionnaire surveys	-.210	No relationship
▪ individual interviews	-.024	No relationship
▪ performance appraisal forms	.031	Very low
▪ focus groups	-.109	No relationship
▪ document reviews /examinations	-.211	No relationship
▪ delphi method	-0.82	Strongly inversed relationship
▪ brainstorming	-.227	No relationship
▪ assessment centers	-.217	No relationship
▪ advisory committees	-.250	No relationship
▪ skills, knowledge and abilities (SKAs) tests	-.132	No relationship

Table 49: Analysis of Correlation (Data Collection Methods and ISO Certification)

5.13.2 Years of Operation

Data Collection Methods	Spearman rho (r)	Relationship Analysis
▪ on-site observations	-.093	No relationship
▪ questionnaire surveys	.053	No relationship
▪ individual interviews	.096	No relationship
▪ performance appraisal forms	-.065	No relationship
▪ focus groups	-.028	No relationship
▪ document reviews / examinations	-.039	No relationship
▪ delphi method	.015	Very low
▪ brainstorming	.086	No relationship
▪ assessment centers	.049	No relationship
▪ advisory committees	-.026	No relationship
▪ skills, knowledge and abilities (SKAs) tests	.283	Low

Table 50: Analysis of Correlation (Data Collection Methods and Years of Operation)

Results show that there was a weak relationship between SKAs tests and length of business (r = .284) and a very weak relationship between the Delphi method with length of business (r = .015). There were however, no significant relationships in years of operation with the rest of the methods.

5.14 Relationship between TNA Techniques with ISO Certification and Years of Operation

5.14.1 ISO Certification

Techniques	Spearman rho (r)	Relationship Analysis
a) Organizational Level		
▪ organizational scanning	-.003	No relationship
▪ balanced scorecard	.044	No relationship
▪ SWOT analysis	.129	No relationship
▪ PEST analysis	-.053	No relationship
b) Operational Level		
▪ task/ knowledge, skills, abilities (KSA) analysis	-.190	No relationship
▪ job analysis	-.100	No relationship
▪ competency analysis	-.187	No relationship
▪ skills inventory	-.399	No relationship
▪ managerial skills audit	-.113	No relationship
c) Individual Level		
▪ performance review / appraisal	-.153	No relationship
▪ repertory grid analysis	-.167	No relationship
▪ versatility chart / analysis	-0.88	Strongly inversed relationship
▪ diary analysis	-.016	No relationship
▪ critical incident	.002	Very low

Table 51: Analysis of Correlation (TNA Techniques and ISO Certification)

As shown in Table 51, a strongly inversed relationship was found between versatility chart / analysis and ISO certifications of organizations. A very weak relationship (r =.002)

was found between the critical incident technique and ISO certification. As for the rest of the techniques, no significant relationships were found between the two variables.

5.14.2 Years of Operation

Techniques	Spearman rho (r)	Relationship Analysis
a) Organizational Level		
▪ organizational scanning	.068	Very low
▪ balanced scorecard	-.021	No relationship
▪ SWOT analysis	-.025	No relationship
▪ PEST analysis	-.111	No relationship
b) Operational Level		
▪ Task / KSA analysis	.055	Very low
▪ job analysis	.046	Very low
▪ competency analysis	.038	Very low
▪ skills inventory	.236	Very low
▪ managerial skills audit	.010	Very low
c) Individual Level		
▪ performance review / appraisal	.008	Very low
▪ repertory grid analysis	-.013	No relationship
▪ versatility chart / analysis	.021	Very low
▪ diary analysis	-.022	No relationship
▪ critical incident	.005	Very low

Table 52: Analysis of Correlation (TNA Techniques and Years of Operation)

The study found very weak relationships between techniques namely organizational scanning, task / KSA analysis, competency analysis, skills inventory, managerial skills audit, performance review, versatility chart / analysis and critical incident techniques with length of operation of an organization. No relationships were found for the rest of the techniques.

5.15 Relationship between Size of Company (Number of Employees) with Budget Allocated for Training.

		Company Size	Training Budget	Relationship Analysis
Number of Employees	Pearson Correlation	1.000	.342**	
	Sig. (2-tailed)	.	.004	Low
	N	84	70	
Training Budget	Pearson Correlation	.342**	1.000	
	Sig. (2-tailed)	.004	.	Low
	N	70	70	

**Correlation is significant at the 0.01 level (2-tailed).

Table 53: Analysis of Correlation (Size of Company and Size of Training Budget)

The Pearson correlation test was employed to know whether the size of a company influenced how much it spent on its employees' training and development activities. As shown in the table above, a weak relationship was found between the two variables (r = .342).

CHAPTER 6
RESEARCH DISCOVERIES

6.1 Introduction

This chapter gathers findings from the study and attempts to answer the objectives as stated in Chapter 1. The overall results obtained from the study are discussed by relating the findings to the literature concerning TNA theory and practice.

6.2 Objective 1: To Identify The Nature of Training Needs Commonly Offered by the Organizations.

In general, the nature of TNAs can be divided into two categories. The first is whether they are conducted due to reasons caused by factors both internal and external to organizations. The second is whether they are reactive or proactive TNAs. Definitions of these terms had already been elaborated in Chapter 2. In the field of human resource development, there is a big difference between the terms 'training' and 'development', and an understanding of how the two differs is important. 'Training' focuses on trying to solve current performance problems, thus, the approach is reactive. 'Development', on the other hand, suggests a more proactive approach and there may be an array of reasons for the development of employees, and these could be due to internal as well as external factors. It was assumed that the respondents who answered the survey understood the differences in these two terms (the study findings indicated that the respondents were quite credible in their field of practice - refer to table 17 to table 22 (p. 79 – 82) in Chapter 5).

The study found that the most common reason for the top 1000 companies to conduct TNAs was *'to fulfill their employees' developmental needs'*. The next reason of conducting TNA was to determine the current performance gaps of employees. This suggests that the organizations considered the personal development of employees as an important aspect and thus initiated TNAs to identify possible training needs required by the employees to develop their potentials. This discovery is surprising and interesting as some claimed that most organizations tended to concentrate more on performance issues rather than employees' developmental needs (Amos-Wilson, 1996; and Chiu, *et al*, 1999).

Nevertheless, these results should be treated with caution for three reasons. First, there is only a small difference separating the first and second highest motive mentioned for conducting TNAs which was *'to determine employees' current performance discrepancies'*. Unlike the first reason, the second reason indicates a reactive approach to TNA in which needs for potential training programmes were determined only when there were performance problems. As elaborated in Chapter 2, these sorts of reactive TNAs fell short in a lot of ways compared to proactive TNAs (Taylor and O'Driscoll, 1998; Clardy, 1997; and Anderson, 1994).

Secondly, out of nine reasons provided in the questionnaire, the reason of *'preparation for unexpected changes in the future'* was found to be the least stated reason for conducting TNA. Similar to the first reason, this reason indicates a proactive TNA. If the organizations were serious in developing their employees, they should have also considered *'preparations for unexpected changes in the future'* an equally important reason. Unfortunately, the results stated otherwise which obviously contradicts arguments regarding the first reason.

Thirdly, a different picture is uncovered if we look at the types of training that the organizations commonly offered. Developmental training only came third after orientation training and technical training.

The training type most commonly provided by the organizations was found to be orientation training. However, if Table 23 (p. 81) is referred, TNAs conducted for the purpose of employees' orientations only came third after *'fulfillment of employees' development*

needs' and *'to treat current performance discrepancies'*. A possible explanation for this difference in points is probably the fact that TNA does not have to be conducted on every orientation training. The 'who', 'where' and 'what' questions that TNA normally addresses in orientation training are much simpler and easier to determine compared to other types of trainings that require more comprehensive and sophisticated analysis. Once a TNA is conducted to design the orientation programme, there is little need for another one as the training contents and training recipients would not differ much.

On the whole, the question of whether the approaches of the organizations to TNA were reactive or proactive is mixed. The gap between the most and the second most stated reasons (with the former indicated as proactive and the latter, reactive TNAs) are small, suggesting no significant difference in terms of TNA approaches. However, if looking at the least mentioned reason (preparation for unexpected changes in the future), we could say that the organizations approaches to TNA were probably more reactive rather than proactive. Similarly, mixed evidence is again found if we look at the types of training that was normally delivered to the staff as the mean differences among training types considered proactive and reactive were not substantial.

6.3 Objective 2: To Determine the Means by Which Participants Were Selected for Trainings.

Four questions were included in the questionnaire to find out how the organizations selected training participants. Overall, it could be said that immediate supervisors had the most significant role in the selection of training participants. Findings from all four questions seem to suggest this. Firstly, immediate supervisors were the most important data source in giving recommendations about who to attend training. Second, the most common ways for selecting employees for training were through discussion and nomination with / by supervisors. And third, views and approvals of supervisors were also considered to be the most crucial factor in the selection of participants.

This practice agrees with suggestions from the literature. Stanley (2002) stated that immediate supervisors were the most common and important sources of data because they

were in the best position to observe the strengths and weaknesses of their subordinates. This finding is also in line with Noe's (2005) opinion that stated as middle-level managers, the major concerns of supervisors in the TNA process is to determine how their subordinates in their respective units could work towards organizational strategic missions.

As mentioned in Chapter 2, relying too much on supervisors could be problematic due to possible inaccuracies of data that they might provide (Wright and Geroy, 1992; and Graham and Mihal, 1986). Fortunately, other than immediate supervisors, the organizations that participated in the survey also included other parties to recommend names for training and, in order of importance, they were human resource / training managers, training personnel, general managers, and to a lesser extent the employees themselves, through self-nomination procedures.

Several similarities and differences arose when comparing the study findings with outcomes of previous research and these are worth discussing. First, the finding of the study is more favorable compared to those of Agnaia (1996) in terms of a presence of two-way communication between supervisors and potential participants. It is believed that such communication took place during discussions with nominations by supervisors and as this method was found to be the most common and quite frequently practiced in the companies in Malaysia. On the other hand, Agnaia in his study reported that most of the techniques used to select participants in the companies in Libya were predominantly based on views from top management, therefore suggested a lack of two-way communication in the participants' selection process. In fact, Agnaia reported that discussion with managers / supervisors was the least common method used in selecting participants for training.

Secondly, referring to suggestions in employees' performance appraisal forms was found to be the second most common way of selecting participants. This finding runs parallel with findings from other parts of the survey whereby employees' level of performance was considered the second most important factor in the selection for training, performance appraisals were regarded an important method in TNA, and performance data was considered a key data source in conducting individual-level analysis in the organizations.

Relating to his survey, Agnaia also reported a similar emphasis on employees' performance reviews by both oil and non-oil companies in Libya.

Thirdly, like Agnaia (1996), the study also found evidence regarding involvement of employees' peers in the selection process. However this practice was not very common. Only a very few companies described this practice as 'always' and 'frequent'. A corresponding result was found as employees' colleagues / peers were considered the last people to recommend training participants.

Fourthly, the research found evidence regarding a turn-taking approach in sending participants for training among employees, though the number of organizations who practiced this was very small. Similarly, Amos-Wilson (1996) also discovered the same practice in NGOs in the United Kingdom.

One question was added in the survey specifically to determine the key initiators of training ideas. Contrary to O'Driscoll and Taylor's (1992) findings, the study found a more favorable result regarding those involved in initiating training ideas. Human resource / training managers were the most involved people, followed by immediate supervisors and training personnel. These first three groups indicated an active involvement on the part of training professionals in the organizations which is a good sign because at least it ensures that critical decisions regarding what training should be offered to employees are made by people with relevant expertise and only after a formal analysis.

To conclude, the study found that the most important party involved in the selection of potential training participants in the organizations surveyed were immediate supervisors. They played the biggest part in recommending names for training and their views / approvals were considered the most important factor in determining candidates for training. Discussions between immediate supervisors and their subordinates followed by nominations by the supervisors were found to be the most common methods in selecting training participants.

6.4 Objective 3: To Identify Data Collection Methods And Techniques Used In TNA Process.

Eleven data collection methods were listed in the survey. It was found that to a certain extent, all methods were used by the companies. However, the most popular method used was performance appraisal forms. This finding corresponds with the previous findings of the study whereby the organizations also regarded performance appraisals and employees' level of performance as crucial aspects of decision making concerning selection of training participants. This finding is similar to that of Agnaia's (1996), who reported performance appraisals and job performance reports as one of the predominant TNA approaches / techniques in Libyan companies.

This finding is of no surprise as performance appraisals are often considered the most common and widely used method in TNA (Brown, 2002; and Agnaia, 1996). However, as discussed in Chapter 2, the use of this method is full with controversies, and many warned of its weaknesses (Roberts, 2002; Leat and Lovell, 1997; and Herbert and Doverspike, 1990). Based on the results, it could be assumed that the organizations did rely heavily on this method to gather their TNA data. This practice is considered acceptable only if the companies had fulfilled certain criteria and had taken necessary measures as discussed in Chapter 2 in order to ensure it could accurately determine their training needs. However, there is also the fear that the organizations simply depended on the method without being seriously concerned as to whether or not it could produce true TNA results.

All of the criteria in choosing data collection methods as suggested by Steadham (1980) and Brown (2002) were, to a certain extent, considered by the organizations in this study. However, the two most important criteria considered by them were desired outcomes and organizational culture and values. In order of importance, the remaining criteria considered by the organizations were: cost-effectiveness, persons to be involved, time required, degree of reliability and validity required, facilities available, ease of use, availability and expertise of HR staff, employees' acceptance, confidentiality and size of sample.

Three distinct similarities of findings can be seen when comparing the top seven criteria considered important by organizations in three studies, namely Elbadri (2001), Gray, *et al* (1997) and this study. A table picturing this comparison is shown as Appendix D. Firstly, choice of data collection method was based primarily on whether the method could provide the relevant and desired data. Secondly, the chosen method had to fit into the organizational cultures and be accepted by its people. Thirdly, as profit-oriented entities, words like efficiency and effectiveness are important and that is probably why the methods chosen had to be practical in terms of the cost, time, energy and ease of use.

Respondents were asked to rate the extent to which they had referred to several sources of data as compiled by Moore and Dutton (1977) and Blanchard and Thacker (2004). In performing TNA at organizational level, the majority of organizations claimed they referred to their organizational goals and objectives as the main data source. The next two most referred sources were skills inventories, and analysis of efficiency indices. Competitors' training practices and current trends in industry were not as often referred to as thought. It is assumed from this finding that the organizations paid enough attention to ensuring that their training efforts were in line with their strategic objectives.

The most important document referred to in performing operational analysis was performance standards. And in individual analysis, the organizations claimed that they referred mainly to performance appraisal data and suggestions from supervisors. These results coincide with the overall findings of the study which suggest that employees' performance and supervisors' views are important elements in their organizational TNA practices.

A few similarities and differences can be found when comparing these findings to Erffmeyer, *et al's* (1991) study. First, organizational goals and efficiency indicators were considered important organizational level data sources in both studies. However, findings of the present study are probably more encouraging as Erffmeyer, *et al* found management judgment the most important source of data, which could suggest an informal TNA approach. Second, all three data sources referred to mostly at the operational level were also considered as important in Erffmeyer, *et al's* study. However, the judgment of the top

management was again prioritized in their study. The data sources referred by the top 1000 companies in Malaysia at individual level analysis were also more favorable compared to the data sources referred by the ASTD members in Erffemeyer *et al's* study (the only important data source they referred was top management's judgment).

In terms of TNA techniques, the study found that SWOT analysis was the main technique used by the organizations to analyze their organizational needs. Nevertheless, this technique was only 'seldom' used by the organizations. In fact, the rest of the organizational level techniques listed in the questionnaire were also rarely used by the organizations which implies that they probably did not analyze training needs at organizational level often enough or they were just not very familiar with the techniques. In addition, KSA analysis and performance reviews / appraisals were found to be the most common techniques that the organizations used to analyze their operational-level and individual-level needs respectively.

6.5 Objective 4: To Determine Level of Perception Regarding Organizational TNA Practices.

Results of the study suggest that overall perceptions of the respondents regarding their firms' TNA practices were high. Majority of the respondents strongly agreed the TNA process was emphasized in their organizations' training practices. Looking at the earlier findings, it can be concluded that the TNA stage had an important place in the organizations' training practices. This was shown in the study where the top 1000 companies in Malaysia had adopted some formal techniques and methods to analyze their training needs and had followed certain proper procedures to choose training participants. This finding concurs with Poon and Rozhan's (2000) study which reported that 92% of the firms in Malaysia who were involved in their study had claimed they undertook TNA before trainings. This finding, on the other hand, contrasts with results from most other studies discussed in Chapter 3 (i.e. Agnaia, 1996; Gray, *et al*, 1997; and Erffmeyer, *et al*, 1991) which reported the reverse.

The respondents strongly felt their training efforts were strategic in the sense that only needs that were in line with the organization's missions were translated into training.

This feeling is probably true for certain reasons. First, it was found that the companies considered organizational goals and objectives as the most referred data sources in analyzing needs at organizational level. Second, evidence was found to suggest that the organizations carried out all three levels of analyses in the TNA process as suggested by many scholars, and by so doing, helped the companies plan training efforts based on their strategic needs. Lastly, the organizations also adopted certain techniques to analyze their needs which involved examination of both internal and external environments. This result is important to show that the firms did not make the same errors in training as highlighted by Amos-Wilson (1996) who reported a mismatch between the overall organizational strategic needs and the types of training actually delivered by NGOs in the United Kingdom.

A large majority of the top 1000 organizations in Malaysia seemed quite confident with the methods they used to analyze training needs. They felt that the methods they used could produce clear, relevant and specific data on performance discrepancies. Most of them also perceived that the methods could differentiate between training 'wants' and 'needs'.

It can be concluded that the methods used by the organizations were up to standards and in line with scholars' suggestions for producing accurate training needs. However, if we look at the overall results of the study, specifically the TNA methods used in the organizations, a different conclusion can be made. It was found earlier that the most used TNA method was performance appraisal forms. In Chapter 2, it was stressed that performance appraisals could be a useful method in TNA only if they are properly designed and implemented. For that reason, it is difficult to say how far the respondents' perceptions on statement 3 (i.e. the methods they used produced clear, relevant, and specific data on performance discrepancies) and statement 4 (i.e. the methods could distinguish 'wants' and 'needs') were true since we do not know whether the method (in this case, performance appraisal forms) they used was effective. In that sense, the results of the study probably do not differ much compared to what was found by Gray, *et al* (1997) and Elbadri (2001) who both found mixed evidence concerning the same two statements.

Another mixed conclusion was found regarding the last statement. The respondents felt that TNA conducted in their organizations could differentiate performance problems

caused by employees' lack of SKAs and those caused by other non-SKAs factors. As mentioned in Chapter 2, this demarcation is critical for the success of training programmes and it is important for training needs analysts to understand the differences. Although the numbers of respondents who 'strongly agree' and 'agree' were higher than the rest of the groups, when examined closely, respondents who chose option 'slightly agree' were also quite high. This could mean that the respondents were not sure whether a fine line was drawn between the two possible causes of performance problems.

To conclude, the respondents' level of perception towards their training practices was positive in the first two statements. This suggests that there was an emphasis on TNA to precede training programmes and that they ensured that their trainings were strategic. Findings from other sections of the study also supported these views. However, inconclusive evidence was found on the remaining statements. The perceptions of respondents on the three statements did not coincide with the type of TNA method their companies used most.

6.6 Objective 5: To Compare TNA Practices With Organizational Demographic Characteristics.

Organizations of different demographic characteristics such as sector, nationality of parent company, ISO certification, length of operation, presence of training unit, size of training budget and company size were compared to uncover any differences in their TNA practices. Reasons for TNA, types of training, data collection methods, and TNA techniques were used to indicate TNA practices.

Overall, it was found that most demographic characteristics as stated earlier did not influence the organizations' TNA practices. However, some significant differences were observed on certain aspects of TNA practices. Firstly, in terms of types of training, delivery of soft skill training was found to differ among organizations of different parent nationalities.

Second, nationality of parent company was also found to significantly affect the application of questionnaire surveys and advisory committees as methods of collecting TNA data.

Third, nationality of parent company again played a part in the adoption of the competency analysis technique to analyze TNA at operational level.

Fourthly, the presence of a training unit in an organization made a significant difference in the use of three techniques to analyze TNA at organizational and operational levels and these techniques were SWOT analysis, competency analysis, and managerial skills audit.

Compared with previous studies, the findings of the study were both similar and different in some selected areas. First, the results of the research agree with the results of Erffmeyer, *et al* (1991) in that both studies found no significant differences with regard to organizational TNA practices, organizational size (based on number of employees) and availability of training departments. Second, the study did not find any differences in TNA practices of organizations of different sectors. In this sense, this finding is probably not in the same line with Elbadri (2001), Erffmeyer, *et al* (1991) and Rozhan (1998 in Poon and Rozhan, 2000) who all noted that, in general, there were some differences regarding training practices of companies of different sectors.

6.7 Objective 6: To Determine Relationships Between Data Collection Methods and Techniques Used to Perform TNA With ISO Certification And Length of Operations of the Organizations.

Literature maintains that ISO certification brings positive impacts to the business practices of firms including improving quality of work life, increasing customer preference, improved quality image and competitiveness, reducing costs and customer complaints. Recently, Quazi and Jacobs (2004) claimed that ISO certification also improved all aspects of a firm's training practices including training needs analysis. Gupta (2000) further reported differences of training practices between firms with and without ISO certification and

suggested that ISO-certified organizations put more emphasis on training compared to non-ISO organizations.

In this study, tests were conducted to uncover any relationship between ISO certification and an organization's adoption of data collection methods and techniques in performing TNA. In general, no relationships were found on most TNA methods and techniques. However, relationships were found between ISO certification of firms with both performance appraisal method and critical incident technique. Nevertheless, both recorded very weak relationships.

This finding seems to suggest that ISO certification does not positively influence firms' selections of TNA data collection methods and TNA techniques in general. From the advantages of ISO to firms' practices as discussed in the literature, it was earlier assumed that compared to non-ISO companies, ISO-certified companies would probably have had use more sophisticated data collection methods and techniques with higher levels of analysis capabilities such as the Delphi method, assessment centers or Balanced Scorecard. However, the findings proved otherwise.

The study also tried to find out whether length of operation of a firm influences its adoption of TNA methods and techniques. In terms of TNA data collection methods, a weak and a very weak relationships were found between length of operations of firms with the use of SKAs tests and Delphi method respectively. In terms of TNA techniques, very low correlations existed between length of operations of firms the application of techniques like organizational scanning, task / KSA analysis, competency analysis, skills inventory, managerial skills audit, performance review, versatility chart / analysis and critical incident techniques.

6.8 Objective 7: To Discover the Relationships Between Company Size and Size of Training Budget.

One of the indicators of a systematic approach to training and to show an organization's commitment towards training and development of its employees is size of

training and development budget (Jameson, 2000; and Poon and Rozhan, 2000). Literature claims that size of an organization always influences its general training practices. For example, Pratten and Curtis (2003) and Westhead and Storey (in Pratten and Curtis, 2003) suggested that large organizations provide more training than smaller organizations. Elbadri (2001) also stated that larger firms gave more commitment to systematic TNA than smaller firms.

For this reason, the Pearson correlation test was used to determine any relationship between size of firm and size of training budget. The study found that a weak relationship existed between the two variables. This suggests that compared to smaller firms, larger ones tended to invest more on training and development of their employees, although this association is minimal. In this case, the study finding concurs with previous study findings stated earlier.

6.9 Discussions

This study was originally triggered by one question. Did the top 1000 corporate companies in Malaysia involved in the study conduct TNA prior to their training efforts? Results of the study found that the organizations claimed they did perform some kind of analysis. A second question emerged. Were their approaches to TNA theoretical? To answer this, the study had examined many aspects of the TNA practices of organizations such as procedures for selecting training participants, methods for gathering data, techniques employed, and whether the tripartite levels of analysis were employed. The study reported that to a certain extent the organizations' TNA practices were somewhat in line with what training / TNA scholars and theorists proposed. There is evidence of systematic procedures present in the organizations for selecting training participants with involvement of multiple parties. Open communication between potential participants and their respective supervisors was also practiced. In addition, they also adopted some formal data collection methods and techniques to analyze their training needs although the types that they used were probably less sophisticated and involved minimal analysis. The results of the study also indicated that all three levels of TNA analysis namely, organizational, operational and individual analyses were conducted by the organizations.

In this sense TNA practices of the top 1000 corporate companies in Malaysia were perhaps more favorable compared with other organizations' practices as discovered in other researches (eg. Gray, *et al*, 1997; O'Driscoll and Taylor, 1992; Amos-Wilson, 1996; and Agnaia, 1996). However, in general the study findings concur with Poon and Rozhan's (2000) who also reported a positive picture regarding TNA practices of manufacturing and service industries in Malaysia. Coincidentally, both studies that recorded favorable results were conducted in Malaysia. Whether country is a factor is unknown, however, this could probably be determined in a future research comparing TNA practices of organizations in multiple countries.

The successful integration of the theory of TNA into practice requires mutual participation from all parties involved in the activity, from top management level to individual employees. Goldstein and Ford (2002) in particular emphasized the importance of organizational support, correct organizational culture, healthy training climate and proper examination of internal as well as external constraints for the success of a TNA activity, and these they had embedded into their TNA model. These factors are indeed important as the respondents of the study agreed these were their major difficulties / problems faced when conducting TNA in their respective companies. The biggest problem identified was lack of commitment, cooperation and support from all levels of management including top management, supervisors, as well as employees. The following are some quotations from respondents expressing their dissatisfaction.

> *"Insufficient commitment from top management leads to lackadaisical attitude throughout the organization on training including TNA, which resulted in half hearted effort in doing the TNA".*

> *"The effectiveness of TNA rely on the system / data available and with the full support from top management. We are lack of this 2 points".*

> *"Currently we are using questionnaire. The problem we are facing is collect back questionnaire. Some of the employees were reluctant to commit to this survey. Thus we can't achieve 100% successfully in TNA survey".*

"Trainee not free to attend training due to work load. Some trainee refused to attend training. Due to production demand, some training were not carried out as planned".

The importance of culture change was also mentioned. Some respondents felt that their companies believed in the 'if ain't broke, don't fix it' attitude. Some companies felt that their staff were qualified and possessed the necessary SKAs, therefore, there was no need for training.

A few respondents also mentioned weaknesses of common TNA methods that were impractical for their use.

"TNA by traditional methods (questionnaires surveys, interviews, assessment centers) are time consuming in nature. That is why we emphasized more on practical approach namely on-site observations and SKAs tests".

"Geographical diverse locations and number of subsidiaries and divisions and sometimes it can be tedious. A software solution should be able to resolve this concern".

"Difficult to get true picture, if you use performance appraisal as your source of information".

Therefore, some respondents felt they needed better TNA approaches such as TNA software.

Some respondents also felt that their top management did not take training issues seriously and failed to understand the purpose of TNA. Some stated that planned training was always cancelled when there were more important work demands. As expected, other common difficulties faced were time and budget constraints. Some respondents mentioned that the budget allocated on training was inadequate and that they did not have enough manpower to conduct a proper TNA.

Other difficulties include lack of expertise and knowledge of training in general and conducting TNA in particular. This is especially a problem when the respondents need to

assess their companies' strategic needs, determine trends in the market and, for immediate supervisors and managers, to analyze their subordinates' SKAs gaps. The respondents went on to mention the difficulty in designing training programmes based on identified needs as well as determining suitable training providers. The following view illustrates this feeling.

> *"The degree of understanding of the objective of TNA in the company is low although relevant training has been provided to the HoDs. Is difficult to convert TNA to actual practice especially some technical courses, which are not available in the market".*

TNA is a management tool created to assist organizations to develop their resources effectively. For theorists, it is important that organizations apply proper TNA theories in order to achieve this. For practitioners, on the other hand, they are more interested in whether the theory is of any use to their organizations and if it is practical enough to be practiced. The following respondents voiced this concern.

> *"TNA is just a theory, what important is how to put into practice the best approach in getting the end RESULTS".* (capitalized letters highlighted by the respondent)

> *"There is a lot of art than science to this process* (refers to TNA)*. A lot of it has subjectivity element. Thus the need to understand the individual and organization well enough for better results alignment".*

6.10 Conclusions

To conclude, the study found that the top 1000 corporate companies' approaches to TNA were quite systematic and in accordance with the suggestions in the literature. This contradicts most previous research. However, to re-emphasize, their approaches may not be very sophisticated. This is probably because of the difficulties and problems constraining their practices which might have forced them to resort to simpler approaches to analyze their training needs. The study found no significant differences in TNA practices of organizations of most demographic characteristics as discussed earlier. However, companies of dissimilar nationality of parent companies were significantly different in terms of delivery of soft skill training, use of questionnaire and advisory committee as data collection

methods, and use of competency analysis technique. The application of SWOT, competency analysis and managerial skills audit techniques were also different between organizations with and without a training unit. ISO certification of firms was found to correlate with the firms' use of performance appraisal method and critical incident technique, though the relationships for both were very weak. Relationships were found between firms' length of operations with two data collection methods namely SKAs tests (weak) and Delphi (very weak). Very weak relationships were also found between length of operations and application of several techniques like organizational scanning, task / KSA analysis, competency analysis, skills inventory, managerial skills audit, performance review, versatility chart / analysis and critical incident technique. Finally, in correspondence with previous research, the study found a relationship between size of firm and size of training budget although the correlation value was low.

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APPENDICES

APPENDIX A

MALAYSIA 1000

KEDUDUKAN 1000 SYARIKAT TERUNGGUL
Top 1000 Companies

BERDASARKAN PULANGAN / JUALAN
Ranked By Turnover / Sales

SEKSYEN
SECTION

BERDASARKAN PULANGAN /JUALAN
RANKED BY TURNOVER / SALES

MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
1	PETROLIAM NASIONAL BHD	MAR 02	67,180,869	24,318,428	1
2	PETRONAS TRADING CORPORATION SDN BHD	MAR 02	16,710,477	134,276	133
3	TENAGA NASIONAL BHD	AUG 01	14,362,600	2,566,700	4
4	SONY TECHNOLOGY MALAYSIA SDN BHD	MAR 02	13,414,582	235,575	82
5	MALAYSIA LNG SDN BHD	MAR 02	13,052,145	2,588,793	3
6	DELL ASIA PACIFIC SDN	JAN 02	12,002,079	771,035	20
7	SIME DARBY BHD	JUN 01	11,959,900	1,205,100	11
8	PERUSAHAAN OTOMOBIL NASIONAL BHD	MAR 02	10,307,663	1,511,820	7
9	TELEKOM MALAYSIA BHD	DEC 01	9,673,200	2,443,600	5
10	MALAYAN BANKING BHD	JUN 01	9,547,696	1,509,952	8
11	MALAYSIAN AIRLINE SYSTEM BHD	MAR 02	8,377,901	(846,493)	999
12	MOTOROLA MALAYSIA SDN BHD	DEC 01	8,024,511	908,457	14
13	SOLECTRON TECHNOLOGY SDN BHD	AUG 01	7,755,338	674,953	25
14	BERJAYA GROUP BHD	APR 01	7,723,803	(86,976)	981
15	EDARAN OTOMOBIL NASIONAL BHD	DEC 01	7,548,331	820,342	18
16	PETRONAS DAGANGAN BHD	MAR 02	7,343,438	656,071	26
17	STMICROELECTRONICS SDN BHD	DEC 01	6,842,426	612,210	30
18	PETRONAS CARIGALI SDN BHD	MAR 02	6,803,504	3,786,872	2
19	WESTERN DIGITAL (MALAYSIA) SDN BHD	JUN 01	6,589,467	409,345	47
20	SHELL MALAYSIA TRADING SDN BHD	DEC 01	5,730,142	944,985	13
21	PPB GROUP BHD	DEC 01	5,629,093	321,566	61
22	MALAYSIA INTERNATIONAL SHIPPING CORPORATION BHD	MAR 02	5,508,434	1,411,049	9
23	HUME INDUSTRIES (MALAYSIA) BHD	JUN 01	5,265,558	253,398	74
24	MALAYSIA LNG DUA SDN BHD	MAR 02	5,017,655	602,581	33
25	PETRONAS PENAPISAN (MELAKA) SDN BHD	MAR 02	4,818,184	(56,023)	972
26	COMMERCE ASSET-HOLDING BHD	DEC 01	4,763,137	515,568	38
27	MEWAHOLEO INDUSTRIES SDN BHD	DEC 01	4,647,851	10,404	613
28	SHELL REFINING CO (FED OF MALAYA) BHD	DEC 01	4,601,402	3,928	765
29	O.Y.L. INDUSTRIES BHD	JUN 01	4,565,551	298,773	66
30	FFM BHD	DEC 01	4,532,452	177,449	108
31	FELDA HOLDINGS SDN BHD	DEC 01	4,408,048	337,451	58
32	DRB-HICOM BHD	MAR 02	4,329,289	391,108	49
33	ESSO MALAYSIA BHD	DEC 01	4,134,362	256,505	73
34	INTEL PRODUCTS (M) SDN BHD	DEC 01	4,073,914	439,763	43
35	MOTOROLA TECHNOLOGY SDN BHD	DEC 01	4,015,419	514,982	39
36	BUMIPUTRA-COMMERCE BANK BHD	DEC 01	4,001,498	213,807	86
37	PROTON EDAR SDN BHD	MAR 02	3,960,449	237,688	80
38	PUBLIC BANK BHD	DEC 01	3,792,535	1,268,138	10
39	PERODUA SALES SDN BHD	DEC 01	3,787,548	119,391	151
40	PERUSAHAAN OTOMOBIL KEDUA SDN BHD	DEC 01	3,778,982	353,873	55
41	RHB CAPITAL BHD	JUN 01	3,416,791	621,527	29
42	RASHID HUSSAIN BHD	JUN 01	3,388,416	267,735	70
43	AMMB HOLDINGS BHD	MAR 02	3,385,351	431,849	45
44	UMW HOLDINGS BHD	DEC 01	3,341,028	371,223	52
45	TNB GENERATION SDN BHD	AUG 01	3,325,625	192,880	99
46	PERODUA MANUFACTURING SDN BHD	DEC 01	3,285,781	203,289	94
47	FELDA PALM INDUSTRIES SDN BHD	DEC 01	3,261,553	241,454	79
48	GENTING BHD	DEC 01	3,148,400	1,095,800	12
49	MAXIS COMMUNICATIONS BHD	DEC 01	3,031,305	777,611	19
50	BRITISH AMERICAN TOBACCO (MALAYSIA) BHD	DEC 01	3,010,370	840,302	16

BERDASARKAN PULANGAN /JUALAN
RANKED BY TURNOVER / SALES

MALAYSIA 1000

M1000 RANK	COMPANY NAME	Turnover		Profit Before Tax	
		Year Ended	2002/2001 RM'000	2002/2001 RM'000	Rank
51	UNITED ENGINEERS (MALAYSIA) BHD	DEC 01	2,878,128	(2,073,567)	1,000
52	GREAT EASTERN LIFE ASSURANCE (MALAYSIA) BHD	DEC 01	2,853,220	150,051	124
53	MAXIS MOBILE SDN BHD	DEC 01	2,803,778	903,874	15
54	BERJAYA LAND BHD	DEC 01	2,773,246	388,523	50
55	SARAWAK SHELL BHD	DEC 01	2,758,144	1,529,519	6
56	HUALON CORPORATION (M) SDN BHD	DEC 01	2,695,382	(642,178)	996
57	HONG LEONG BANK BHD	JUN 01	2,586,470	603,548	32
58	NESTLE (MALAYSIA) BHD	DEC 01	2,585,708	264,702	71
59	ORIENTAL HOLDINGS BHD	DEC 01	2,583,036	204,552	92
60	HONG LEONG CREDIT BHD	JUN 01	2,563,612	575,452	35
61	PGEO EDIBLE OILS SDN BHD	DEC 01	2,528,489	12,346	574
62	MAGNUM CORPORATION BHD	DEC 01	2,518,011	413,500	46
63	NESTLE PRODUCTS SDN BHD	DEC 01	2,510,694	158,317	116
64	HONG LEONG INDUSTRIES BHD	JUN 01	2,510,654	131,572	139
65	RESORTS WORLD BHD	DEC 01	2,503,100	633,400	27
66	CELCOM (MALAYSIA) BHD	DEC 01	2,483,011	138,701	129
67	UMW TOYOTA MOTOR SDN BHD	DEC 01	2,454,113	208,562	90
68	YEOH TIONG LAY & SONS HOLDINGS SDN BHD	JUN 01	2,350,149	709,980	24
69	PANASONIC INDUSTRIAL CO (M) SDN BHD	MAR 02	2,341,699	7,786	676
70	BERJAYA SPORTS TOTO BHD	APR 01	2,333,339	402,515	48
71	YTL CORPORATION BHD	JUN 01	2,326,045	721,959	22
72	TEXAS INSTRUMENTS MALAYSIA SDN BHD	DEC 01	2,295,024	134,009	134
73	KENWOOD ELECTRONICS TECHNOLOGIES (M) SDN BHD	MAR 02	2,294,439	16,875	501
74	MAA HOLDINGS BHD	DEC 01	2,280,043	46,957	290
75	SHELL TIMUR SDN BHD	DEC 01	2,242,461	333,489	59
76	SPORTS TOTO MALAYSIA SDN BHD	APR 01	2,240,858	361,897	54
77	FUNAI ELECTRIC (MALAYSIA) SDN BHD	DEC 01	2,156,082	86,866	193
78	KUMPULAN GUTHRIE BHD	DEC 01	2,045,823	103,470	169
79	KUALA LUMPUR KEPONG BHD	SEP 01	2,041,614	187,074	103
80	JABIL CIRCUIT SDN BHD	AUG 01	1,976,603	200,394	97
81	AFFIN HOLDINGS BHD	DEC 01	1,971,013	(571,255)	995
82	SAMSUNG SDI (MALAYSIA) BHD	DEC 01	1,966,579	299,188	65
83	PETRONAS GAS BHD	MAR 02	1,949,575	586,798	34
84	SHARP ELECTRONICS (MALAYSIA) SDN BHD	MAR 02	1,939,514	11,483	593
85	ADVANCED MICRO DEVICES EXPORT SDN BHD	DEC 01	1,905,531	16,088	513
86	MAYBAN FINANCE BHD	JUN 01	1,904,389	504,074	40
87	MAGNUM 4D BHD	DEC 01	1,899,127	164,134	114
88	FLEXTRONICS TECHNOLOGY (MALAYSIA) SDN BHD	MAR 02	1,870,076	3,985	762
89	SAMSUNG ELECTRONICS DISPLAY (M) SDN BHD	DEC 01	1,823,220	27,045	396
90	TITAN PETROCHEMICALS & POLYMERS BHD	DEC 01	1,798,590	(367,357)	992
91	CHUNGHWA PICTURE TUBES (MALAYSIA) SDN BHD	DEC 01	1,713,466	108,417	161
92	MNI HOLDINGS BHD	MAR 02	1,707,973	149,566	125
93	MALAYSIA NATIONAL INSURANCE BHD	MAR 02	1,696,220	168,289	111
94	PADIBERAS NASIONAL BHD	DEC 01	1,679,863	128,245	142
95	JVC VIDEO MALAYSIA SDN BHD	MAR 02	1,676,230	3,666	771
96	MALAYAN CEMENT BHD	DEC 01	1,657,299	74,562	219
97	SOUTHERN BANK BHD	DEC 01	1,654,217	274,683	69
98	EXXONMOBIL MALAYSIA SDN BHD	DEC 01	1,650,320	155,637	119
99	HSBC BANK MALAYSIA BHD	DEC 01	1,625,048	482,780	42
100	AGILENT TECHNOLOGIES (MALAYSIA) SDN BHD	OCT 01	1,619,939	248,738	77

BERDASARKAN PULANGAN /JUALAN
RANKED BY TURNOVER / SALES

MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
101	AMFB HOLDINGS BHD	MAR 02	1,614,273	300,195	64
102	SHARP-ROXY ELECTRONICS CORPORATION (M) SDN BHD	MAR 02	1,608,731	12,688	569
103	BP MALAYSIA SDN BHD	DEC 01	1,593,636	106,053	165
104	MATSUSHITA AUDIO VIDEO (M) SDN BHD	MAR 02	1,576,133	52,344	274
105	BROTHER ENGINEERING (MALAYSIA) SDN BHD	DEC 01	1,571,965	1,439	830
106	KAH MOTOR CO SDN BHD	DEC 01	1,565,654	93,807	177
107	CITIBANK BHD	DEC 01	1,563,421	489,206	41
108	FRASER & NEAVE HOLDINGS BHD	SEP 01	1,541,253	109,615	160
109	EON BANK BHD	DEC 01	1,534,934	328,217	60
110	GIANT TMC BHD	DEC 01	1,530,832	59,960	256
111	TRACTORS MALAYSIA HOLDINGS BHD	JUN 01	1,518,600	167,800	112
112	SHARP-ROXY CORPORATION (M) SDN BHD	MAR 02	1,516,409	14,443	542
113	MALAKOFF BHD	AUG 01	1,513,462	527,001	36
114	TAN CHONG MOTOR HOLDINGS BHD	DEC 01	1,500,585	152,353	121
115	STANDARD CHARTERED BANK MALAYSIA BHD	DEC 01	1,492,587	25,581	404
116	COSWAY CORPORATION BHD	APR 01	1,487,804	24,183	418
117	SEGARI ENERGY VENTURES SDN BHD	AUG 01	1,481,492	250,846	76
118	BENQ TECHNOLOGIES SDN BHD	DEC 01	1,474,379	7,920	671
119	AGILENT TECHNOLOGIES MICROWAVE PRODUCTS (M) SDN BHD	OCT 01	1,440,592	135,658	131
120	NIPPON ELECTRIC GLASS (MALAYSIA) SDN BHD	DEC 01	1,424,930	131,696	138
121	PAN MALAYSIAN POOLS SDN BHD	JAN 02	1,407,101	168,487	110
122	PERMODALAN NASIONAL BHD	DEC 01	1,403,943	737,694	21
123	SOUTHERN STEEL BHD	DEC 01	1,373,871	(34,705)	960
124	RHB BANK BHD	JUN 01	1,338,211	518,414	37
125	MALAYSIAN PACIFIC INDUSTRIES BHD	JUN 01	1,332,682	317,658	63
126	YTL POWER INTERNATIONAL BHD	JUN 01	1,319,512	608,312	31
127	GOLDEN HOPE PLANTATIONS BHD	JUN 01	1,317,421	71,533	226
128	INTEL TECHNOLOGY SDN BHD	DEC 01	1,299,793	94,604	176
129	IOI CORPORATION BHD	JUN 01	1,291,578	364,096	53
130	DIETHELM HOLDINGS (MALAYSIA) BHD	DEC 01	1,281,619	5,605	717
131	OCBC BANK (MALAYSIA) BHD	DEC 01	1,278,395	320,366	62
132	MALAYSIAN PLANTATIONS BHD	MAR 02	1,244,514	151,164	123
133	ALLIANCE BANK MALAYSIA BHD	MAR 02	1,244,183	180,050	106
134	CAHYA MATA SARAWAK BHD	DEC 01	1,242,771	137,451	130
135	EDARAN TAN CHONG MOTOR SDN BHD	DEC 01	1,239,224	83,089	201
136	YTL POWER GENERATION SDN BHD	JUN 01	1,227,663	434,552	44
137	THE STORE CORPORATION BHD	MAR 02	1,226,599	25,020	406
138	HONG LEONG ASSURANCE BHD	JUN 01	1,224,716	16,670	502
139	PIONEER TECHNOLOGY (MALAYSIA) SDN BHD	MAR 02	1,222,876	14,009	547
140	PROJEK LEBUHRAYA UTARA-SELATAN BHD	DEC 01	1,220,000	631,414	28
141	ALPS ELECTRIC (MALAYSIA) SDN BHD	MAR 02	1,219,655	(1,618)	885
142	TEAC ELECTRONICS (M) SDN BHD	MAR 02	1,210,060	(788)	875
143	FLEXTRONICS (MALAYSIA) SDN BHD	MAR 02	1,203,785	45,765	294
144	JAYA JUSCO STORES BHD	FEB 02	1,200,636	80,327	204
145	VENTURE ELECTRONICS SERVICES (MALAYSIA) SDN BHD	DEC 01	1,199,416	98,367	174
146	TITAN PETROCHEMICALS (M) SDN BHD	DEC 01	1,189,340	(211,558)	989
147	INFINEON TECHNOLOGIES (MALAYSIA) SDN BHD	SEP 01	1,174,382	(83,395)	979
148	YAMAHA ELECTRONICS MANUFACTURING (M) SDN BHD	DEC 01	1,149,796	1,234	834
149	PETRONAS TANKERS SDN BHD	MAR 02	1,140,344	713,675	23
150	LEADER UNIVERSAL HOLDINGS BHD	DEC 01	1,137,196	18,927	475

BERDASARKAN PULANGAN /JUALAN
RANKED BY TURNOVER / SALES

MALAYSIA 1000

M1000: RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
151	JVC ELECTRONICS.MALAYSIA SDN BHD	MAR 02	1,126,395	4,592	743
152	ALSTOM POWER ASIA PACIFIC SDN BHD	MAR 02	1,113,243	53,504	269
153	BROTHER INDUSTRIES TECHNOLOGY (M) SDN BHD	DEC 01	1,096,967	9,489	637
154	EON FINANCE BHD	DEC 01	1,093,880	212,432	87
155	MATSUSHITA COMPRESSOR & MOTOR SDN BHD	MAR 02	1,089,412	45,732	295
156	TEJANA TRADING CORP SDN BHD	MAR 02	1,074,535	2,730	789
157	KFC HOLDINGS (MALAYSIA) BHD	DEC 01	1,071,320	81,126	202
158	CELESTICA ELECTRONICS (M) SDN BHD	DEC 01	1,055,810	20,531	454
159	NESTLE FOODS (MALAYSIA) SDN BHD	DEC 01	1,044,364	105,701	166
160	PUBLIC FINANCE BHD	DEC 01	1,037,399	378,332	51
161	TECHNOCOM SYSTEMS SDN BHD	DEC 01	1,036,733	77,461	212
162	BOUSTEAD HOLDINGS BHD	DEC 01	1,024,251	(14,577)	932
163	KOMAG USA (MALAYSIA) SDN	DEC 01	1,017,578	(71,263)	975
164	PERNAS INTERNATIONAL HOLDINGS BHD	DEC 01	1,016,499	(19,712)	945
165	KYUSHU MATSUSHITA ELECTRIC (MALAYSIA) SDN BHD	MAR 02	1,001,319	23,111	428
166	SUNWAY HOLDINGS INCORPORATED BHD	DEC 01	998,663	(62,476)	974
167	MULPHA INTERNATIONAL BHD	DEC 01	992,486	110,600	158
168	PSC INDUSTRIES BHD	DEC 01	985,877	106,972	163
169	MATSUSHITA AIR-CONDITIONING CORPORATION SDN BHD	MAR 02	969,288	42,806	307
170	PENANG SHIPBUILDING & CONSTRUCTION SDN BHD	DEC 01	967,641	104,465	168
171	ERICSSON (MALAYSIA) SDN BHD	DEC 01	953,781	100,890	173
172	CARLSBERG MARKETING SDN BHD	DEC 01	931,428	75,178	216
173	PHILIPS MALAYSIA SDN BHD	DEC 01	928,918	30,850	375
174	TITAN POLYETHYLENE (MALAYSIA) SDN BHD	DEC 01	928,223	(147,023)	984
175	AFFIN BANK BHD	DEC 01	920,367	(747,191)	998
176	ING INSURANCE BHD	DEC 01	914,529	48,281	284
177	K.T.S. HOLDINGS SDN BHD	DEC 01	913,590	7,935	670
178	DIGI.COM BHD	APR 01	907,803	189,985	102
179	MALAYSIA AIRPORTS HOLDINGS BHD	DEC 01	896,144	256,910	72
180	AMMERCHANT BANK BHD	MAR 02	895,905	128,407	141
181	FELCRA BHD	DEC 01	887,744	(50,571)	968
182	DAI HWA HOLDINGS (M) BHD	DEC 01	884,493	9,584	634
183	MINOLTA MALAYSIA SDN BHD	MAR 02	878,403	2,440	795
184	NATIONAL PANASONIC (MALAYSIA) SDN BHD	MAR 02	874,510	18,190	486
185	TRACTORS MALAYSIA (1982) SDN BHD	JUN 01	871,601	119,520	149
186	MCIS ZURICH INSURANCE BHD	JUN 01	862,397	9,089	647
187	BROTHER INDUSTRIES (JOHOR) SDN BHD	DEC 01	857,522	6,269	704
188	IJM CORPORATION BHD	DEC 01	857,391	210,409	89
189	SHIN YANG HOLDING SDN BHD	JUN 01	853,414	110,594	159
190	PACIFIC INTER-LINK SDN BHD	DEC 01	851,973	2,648	791
191	PRUDENTIAL ASSURANCE MALAYSIA BHD	DEC 01	846,017	111,911	156
192	CARLSBERG BREWERY MALAYSIA BHD	DEC 01	841,113	161,670	115
193	COMMERCIAL IMPORTERS & DISTRIBUTORS SDN BHD	DEC 01	840,155	840,155	17
194	TOBACCO IMPORTERS & MANUFACTURERS SDN BHD	DEC 01	833,754	59,957	257
195	GAMUDA BHD	JUL 01	831,283	276,035	68
196	MAGNIFICIENT DIAGRAPH SDN BHD	DEC 01	824,871	(6,671)	910
197	KWANTAS CORPORATION BHD	JUN 01	818,955	28,851	386
198	KWANTAS OIL SDN BHD	JUN 01	817,562	22,430	437
199	LEIGHTON CONTRACTORS (MALAYSIA) SDN BHD	JUN 01	816,023	87,496	190
200	PSC-NAVAL DOCKYARD SDN BHD	DEC 01	809,105	147,312	126

BERDASARKAN PULANGAN /JUALAN
RANKED BY TURNOVER / SALES

MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
201	MATSUSHITA ELECTRIC CO (MALAYSIA) BHD	MAR 02	806,374	59,938	258
202	INVENTEC ELECTRONICS (M) SDN BHD	DEC 01	803,611	12,284	577
203	DAIRY FARM GIANT RETAIL SDN BHD	DEC 01	795,168	27,020	397
204	SHARP MANUFACTURING CORPORATION (M) SDN BHD	MAR 02	793,873	8,009	669
205	PALMCO HOLDINGS BHD	JUN 01	792,951	141,609	128
206	MAGNUM 4D (SELANGOR) SDN BHD	DEC 01	792,939	58,786	259
207	GEK POH (HOLDINGS) SDN BHD	JAN 02	789,713	73,273	224
208	TAN CHONG & SONS MOTOR CO SDN BHD	DEC 01	774,819	24,890	407
209	TALAM CORPORATION BHD	JAN 02	772,529	45,891	292
210	S.E.H. MALAYSIA SDN BHD	DEC 01	767,852	56,118	265
211	PINTARMAS SDN BHD	DEC 01	767,753	50,250	278
212	CREST PETROLEUM BHD	DEC 01	767,653	64,118	243
213	LAHAD DATU EDIBLE OILS SDN BHD	DEC 01	765,148	8,840	652
214	UNITED OVERSEAS BANK (MALAYSIA) BHD	DEC 01	764,198	211,428	88
215	SIMEN UTAMA SDN BHD	DEC 01	762,771	18,479	481
216	ANCOM BHD	MAY 01	761,815	34,691	355
217	SANDAKAN EDIBLE OILS SDN BHD	DEC 01	758,901	5,767	716
218	MALAYSIAN MOSAICS BHD	JAN 02	753,570	73,974	223
219	PAN-CENTURY EDIBLE OILS SDN BHD	SEP 01	749,291	24,524	413
220	GENTING SANYEN POWER SDN BHD	DEC 01	747,146	292,453	67
221	COMMERCE INTERNATIONAL MERCHANT BANKERS BHD	DEC 01	741,619	252,182	75
222	DENSO (MALAYSIA) SDN BHD	MAR 02	740,854	90,014	186
223	CYCLE & CARRIAGE BINTANG BHD	DEC 01	740,772	96,977	175
224	BANK PEMBANGUNAN & INFRASTRUKTUR (MALAYSIA) BHD	DEC 01	733,861	229,998	83
225	MALAYSIAN NATIONAL REINSURANCE BHD	MAR 02	733,369	61,679	251
226	HEWLETT-PACKARD SALES (MALAYSIA) SDN BHD	OCT 01	731,379	11,965	583
227	F & N COCA-COLA (MALAYSIA) SDN BHD	SEP 01	721,068	37,327	335
228	M K LAND HOLDINGS BHD	DEC 01	718,196	177,189	109
229	AMINVESTMENT SERVICES BHD	MAR 02	713,246	6,684	694
230	MALAYSIA SHIPYARD & ENGINEERING SDN BHD	DEC 01	713,061	78,020	210
231	RAMATEX BHD	DEC 01	711,205	93,001	180
232	ENCORP CONSTRUCT SDN BHD	JAN 02	709,574	1,154	837
233	NCB HOLDINGS BHD	DEC 01	706,669	78,561	207
234	FIRST MOBILE GROUP SDN BHD	DEC 01	705,110	16,549	504
235	HITACHI ELECTRONIC PRODUCTS (MALAYSIA) SDN BHD	MAR 02	704,067	10,164	619
236	KULIM (MALAYSIA) BHD	DEC 01	702,565	12,704	568
237	LINGUI DEVELOPMENTS BHD	JUN 01	699,524	120,962	148
238	SANYO PT (M) SDN BHD	MAR 02	698,003	58,581	260
239	MALAYAN UNITED INDUSTRIES BHD	DEC 01	692,839	(45,789)	964
240	MALAYAN SUGAR MANUFACTURING CO BHD	DEC 01	684,769	92,563	181
241	THE NEW STRAITS TIMES PRESS (MALAYSIA) BHD	AUG 01	680,188	(171,451)	988
242	GUINNESS ANCHOR BHD	JUN 01	670,381	78,448	208
243	BHLB PACIFIC TRUST MANAGEMENT BHD	DEC 01	663,992	5,349	723
244	APM AUTOMOTIVE HOLDINGS BHD	DEC 01	659,584	79,617	206
245	SAPURA HOLDINGS SDN BHD	JAN 02	658,168	(75,774)	978
246	MAJU HOLDINGS SDN BHD	DEC 01	656,909	(168,362)	987
247	EAC HOLDINGS (MALAYSIA) SDN BHD	DEC 01	654,413	(11,411)	922
248	ZUELLIG PHARMA SDN BHD	DEC 01	652,240	18,941	474
249	MATSUSHITA INDUSTRIAL CORPORATION SDN BHD	MAR 02	650,932	(31,789)	959
250	KURNIA INSURANS (MALAYSIA) BHD	JUN 01	650,254	86,385	194

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MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
251	TKR MANUFACTURING (MALAYSIA) SDN BHD	DEC 01	646,253	(5,800)	906
252	TITAN PP POLYMERS (M) SDN BHD	DEC 01	643,645	(6,562)	909
253	MAKRO CASH & CARRY DISTRIBUTION (M) SDN BHD	DEC 01	640,421	(18,446)	943
254	EUROPLUS BHD	MAR 02	637,467	76,775	213
255	METROD (MALAYSIA) BHD	DEC 01	636,839	10,018	622
256	POS MALAYSIA BHD	DEC 01	635,340	36,766	340
257	COMPAQ COMPUTER CORPORATION MALAYSIA SDN BHD	DEC 01	634,476	18,969	472
258	HARRISONS HOLDINGS (MALAYSIA) BHD	DEC 01	634,192	11,246	599
259	UNIVERSAL CABLE (M) BHD	DEC 01	633,676	2,253	802
260	TRU-TECH HOLDINGS BHD	DEC 01	633,073	(22,873)	949
261	JT INTERNATIONAL BERHAD	DEC 01	628,705	80,625	203
262	MED-BUMIKAR MARA SDN BHD	DEC 01	624,682	119,452	150
263	TECHNIP GEOPRODUCTION (M) SDN BHD	DEC 01	623,849	12,007	582
264	MALAYAN CEMENT INDUSTRIES SDN BHD	DEC 01	621,826	30,891	374
265	JAYA TIASA HOLDINGS BHD	APR 01	621,471	(5,425)	903
266	TRADEWINDS (M) BHD	DEC 01	620,264	84,768	199
267	UNITED STRAITS FUSO SDN BHD	MAR 02	618,902	74,190	222
268	FPG OLEOCHEMICALS SDN BHD	DEC 01	617,597	182,869	105
269	MINOLTA PRECISION ENGINEERING (M) SDN BHD	MAR 02	615,164	1,587	821
270	LION DIVERSIFIED HOLDINGS BHD	JUN 01	614,372	21,063	449
271	ANTAH HOLDINGS BHD	JUN 01	614,131	(12,710)	926
272	IBM MALAYSIA SDN BHD	DEC 01	613,885	126,052	143
273	MBM RESOURCES BHD	DEC 01	612,572	130,144	140
274	B. BRAUN MEDICAL INDUSTRIES SDN BHD	DEC 01	610,376	62,612	248
275	TAIYO YUDEN (SARAWAK) SDN BHD	MAR 02	598,517	190,188	101
276	TIOXIDE (MALAYSIA) SDN BHD	DEC 01	597,125	41,647	316
277	JT INTERNATIONAL TRADING SDN BHD	DEC 01	596,730	106,429	164
278	BASF PETRONAS CHEMICALS SDN BHD	DEC 01	595,320	(277,990)	991
279	ASSOCIATED PAN MALAYSIA CEMENT SDN BHD	DEC 01	590,691	23,581	422
280	BINTULU EDIBLE OILS SDN BHD	DEC 01	589,027	19,285	467
281	POWERTEK BHD	JAN 02	588,716	236,994	81
282	TANJONG ENERGY HOLDINGS SDN BHD	JAN 02	588,716	215,196	85
283	SUNWAY CITY BHD	DEC 01	587,969	34,860	352
284	MAYBAN FORTIS HOLDINGS BHD	JUN 01	583,589	(22,010)	948
285	MALAYSIA SMELTING CORPORATION BHD	DEC 01	582,647	33,694	361
286	UNILEVER (MALAYSIA) HOLDINGS SDN BHD	DEC 01	581,644	(24,769)	953
287	DMIB BHD	JUN 01	580,397	28,633	388
288	TOSHIBA ELECTRONICS MALAYSIA SDN BHD	MAR 02	579,392	54,533	267
289	TORAY PLASTICS (MALAYSIA) SDN BHD	MAR 02	578,448	21,893	441
290	V.S. INDUSTRY BHD	JUL 01	578,209	34,037	360
291	SYKT LAMBANG TENAGA PUTRA SDN BHD	DEC 01	576,094	2,198	803
292	LEONG HUP HOLDINGS BHD	MAR 02	576,075	19,810	458
293	TDK (MALAYSIA) SDN BHD	MAR 02	575,126	(811)	876
294	MALAYAWATA STEEL BHD	MAR 02	573,597	28,610	389
295	UTAMA BANKING GROUP BHD	DEC 01	569,389	20,299	456
296	PUTRAJAYA HOLDINGS SDN BHD	MAR 02	568,770	67,377	238
297	MITSUMI TECHNOLOGY (M) SDN BHD	MAR 02	563,871	35,973	345
298	CANON OPTO (MALAYSIA) SDN BHD	DEC 01	561,961	18,438	483
299	QL RESOURCES BHD	MAR 02	561,822	26,734	400
300	MALAYAN FLOUR MILLS BHD	DEC 01	558,215	26,108	402

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MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
301	O.Y.L. MANUFACTURING CO SDN BHD	JUN 01	558,108	70,057	230
302	SAMSUNG CORNING (MALAYSIA) SDN BHD	DEC 01	558,070	74,868	217
303	S P SETIA BHD	OCT 01	555,173	124,997	145
304	CARSEM (M) SDN BHD	JUN 01	555,123	190,464	100
305	AMBANK BHD	MAR 02	554,982	22,858	433
306	CARSEM SEMICONDUCTOR SDN BHD	JUN 01	553,285	141,879	127
307	MATSUSHITA ELECTRONIC DEVICES (M) SDN BHD	MAR 02	552,349	16,935	500
308	PUNCAK NIAGA HOLDINGS BHD	DEC 01	552,337	179,689	107
309	AFFIN-ACF HOLDINGS BHD	DEC 01	552,317	111,565	157
310	MATSUSHITA ELECTRONIC COMPONENTS (MALAYSIA) SDN BHD	MAR 02	552,097	28,730	387
311	TEXCHEM RESOURCES BHD	DEC 01	551,368	9,550	636
312	AROMATICS MALAYSIA SDN BHD	MAR 02	551,157	(232,447)	990
313	NEC SEMICONDUCTORS (MALAYSIA) SDN BHD	MAR 02	543,754	8,913	651
314	PHARMANIAGA BHD	DEC 01	543,496	51,604	275
315	WAH SEONG (MALAYA) TRADING CO SDN BHD	DEC 01	542,245	35,807	348
316	FORD MALAYSIA SDN BHD	JUN 01	541,084	31,162	371
317	PHARMANIAGA LOGISTICS SDN BHD	DEC 01	540,823	32,393	366
318	POSIM BHD	JUN 01	539,505	34,440	358
319	MALAYSIAN RESOURCES CORPORATION BHD	AUG 01	533,080	(648,170)	997
320	MALAYSIAN NEWSPRINT INDUSTRIES SDN BHD	JUN 01	531,878	41,439	319
321	COLGATE-PALMOLIVE (MALAYSIA) SDN BHD	DEC 01	527,925	70,511	228
322	IOI EDIBLE OILS SDN BHD	JUN 01	527,691	22,244	439
323	KRIS COMPONENTS BHD	DEC 01	525,890	37,743	333
324	SOUTHERN FINANCE BHD	DEC 01	525,541	122,035	147
325	SHELL MDS (MALAYSIA) SDN BHD	DEC 01	525,332	(12,266)	925
326	BILLION SHOPPING CENTRE SDN BHD	DEC 01	524,196	3,130	782
327	ETHYLENE MALAYSIA SDN BHD	MAR 02	523,995	200,601	96
328	SONY (MALAYSIA) SDN BHD	MAR 02	523,891	16,568	503
329	MUHIBBAH ENGINEERING (M) BHD	DEC 01	522,880	4,293	749
330	ALLIANZ GENERAL INSURANCE MALAYSIA BHD	JUN 01	521,529	(18,277)	942
331	CENTRAL SUGARS REFINERY SDN BHD	DEC 01	517,618	40,717	324
332	ALCATEL NETWORK SYSTEMS (MALAYSIA) SDN BHD	DEC 01	517,612	23,317	423
333	KFC (PENINSULAR MALAYSIA) SDN BHD	DEC 01	517,208	41,096	320
334	TNB FUEL SERVICES SDN BHD	AUG 01	515,800	2,697	790
335	HAP SENG CONSOLIDATED BHD	JAN 02	515,651	151,818	122
336	SUNWAY CONSTRUCTION BHD	DEC 01	514,492	23,226	424
337	LAM SOON (M) BHD	DEC 01	513,274	56,332	264
338	AE TECHNOLOGY SDN BHD	JUN 01	511,057	42,192	313
339	AMANAH CAPITAL PARTNERS BHD	DEC 01	503,186	205,356	91
340	OVERSEAS ASSURANCE CORPORATION (MALAYSIA) BHD	DEC 01	502,214	27,600	393
341	INTERCONTINENTAL SPECIALTY FATS SDN BHD	DEC 01	500,188	25,049	405
342	FABER GROUP BHD	JUN 01	499,321	(103,290)	983
343	COURTS MAMMOTH BHD	MAR 02	498,353	91,409	183
344	CHEMICAL CO OF MALAYSIA BHD	DEC 01	497,563	12,819	565
345	EUROPLUS CORPORATION SDN BHD	MAR 02	497,305	76,388	214
346	KUB MALAYSIA BHD	DEC 01	496,496	(17,596)	936
347	NGO CHEW HONG OILS & FATS (M) SDN BHD	DEC 01	496,421	7,839	673
348	MAYBAN LIFE ASSURANCE BHD	JUN 01	494,868	11,543	581
349	KIAN JOO CAN FACTORY BHD	DEC 01	494,028	41,907	315
350	HONG LEONG FINANCE BHD	JUN 01	490,245	338,038	57

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MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
351	DUNHAM-BUSH (MALAYSIA) BHD	APR 01	489,523	(12,793)	927
352	FLEXTRONICS MANUFACTURING (M) SDN BHD	MAR 02	488,645	3,321	778
353	UDA HOLDINGS BHD	DEC 01	488,339	44,920	297
354	WILMAR EDIBLE OILS SDN BHD	DEC 01	488,237	6,013	710
355	MAXISEGAR SDN BHD	JAN 02	486,154	26,888	399
356	SANKYO PRECISION (MALAYSIA) SDN BHD	MAR 02	484,235	2,018	807
357	KECK SENG (MALAYSIA) BHD	DEC 01	481,158	15,806	516
358	ASSEMBLY SERVICES SDN BHD	DEC 01	478,765	12,647	570
359	MALAYSIAN OXYGEN BHD	SEP 01	476,087	133,937	135
360	TIONG TOH SIONG HOLDINGS SDN BHD	JUN 01	475,450	117,404	153
361	FAJAR RETAIL ENTERPRISE SDN BHD	MAY 01	475,343	4,177	754
362	WCT ENGINEERING BHD	JAN 02	473,856	74,370	220
363	MWE HOLDINGS BHD	DEC 01	471,554	(21,449)	947
364	CEMENT INDUSTRIES OF MALAYSIA BHD	DEC 01	471,223	22,764	434
365	BANK INDUSTRI & TEKNOLOGI MALAYSIA BHD	DEC 01	471,077	93,392	179
366	ACER SALES & SERVICES SDN BHD	DEC 01	470,353	11,329	598
367	MTD CAPITAL BHD	MAR 02	469,861	91,740	182
368	STAR PUBLICATIONS (MALAYSIA) BHD	DEC 01	468,857	86,328	195
369	IPMUDA BHD	DEC 01	468,620	9,770	633
370	DELCOM SERVICES SDN BHD	DEC 01	468,362	18,009	490
371	IJM CONSTRUCTION SDN BHD	DEC 01	468,212	61,904	250
372	EXXONMOBIL BORNEO SDN BHD	DEC 01	467,753	47,738	286
373	YEO HIAP SENG (MALAYSIA) BHD	DEC 01	464,547	21,404	445
374	HIGHLANDS & LOWLANDS BHD	DEC 01	463,976	219,786	84
375	F&NCC BEVERAGES SDN BHD	SEP 01	463,671	17,461	496
376	FELDA RUBBER INDUSTRIES SDN BHD	DEC 01	463,338	3,858	766
377	BOON SIEW SDN BHD	DEC 01	461,781	157,831	117
378	BINA PURI HOLDINGS BHD	DEC 01	458,713	9,236	643
379	IKEDA I.O.M. HOLDINGS (MALAYSIA) SDN BHD	SEP 01	457,837	77,471	211
380	PARKSON CORPORATION SDN BHD	JUN 01	457,691	(11,065)	920
381	BASF (MALAYSIA) SDN BHD	DEC 01	455,528	(26,439)	955
382	LEADER CABLE INDUSTRY BHD	DEC 01	455,418	12,312	576
383	GOLDEN JOMALINA FOOD INDUSTRIES SDN BHD	JUN 01	454,444	2,307	800
384	SYARIKAT PEMBENAAN YEOH TIONG LAY SDN BHD	JUN 01	452,511	9,184	646
385	IOI COMMODITY TRADING SDN BHD	JUN 01	452,155	218	861
386	W T K HOLDINGS BERHAD	DEC 01	451,906	42,430	310
387	COGNIS OLEOCHEMICALS (M) SDN BHD	DEC 01	451,027	68,802	233
388	HITACHI SEMICONDUCTOR TECHNOLOGY (M) SDN BHD	MAR 02	450,486	7,447	682
389	SHIMANO COMPONENTS (MALAYSIA) SDN BHD	NOV 01	449,962	47,471	287
390	AUTOMOTIVE CORPORATION (MALAYSIA) SDN BHD	MAR 02	449,868	1,714	818
391	GAS MALAYSIA SDN BHD	JAN 02	448,168	63,265	246
392	TT DOTCOM SDN BHD	DEC 01	447,206	67,887	234
393	SHIN-ETSU (MALAYSIA) SDN BHD	DEC 01	443,704	1,690	819
394	I C I (MALAYSIA) HOLDINGS SDN BHD	DEC 01	442,403	53,862	268
395	PHILIP MORRIS (MALAYSIA) SDN BHD	DEC 01	442,092	44,846	298
396	BIMB HOLDINGS BHD	JUN 01	441,371	70,397	229
397	CARGILL SPECIALTY OILS & FATS SDN BHD	MAY 01	438,615	29,064	384
398	TL OFFSHORE SDN BHD	DEC 01	437,423	11,929	584
399	MALAYSIA AIRPORTS (SEPANG) SDN BHD	DEC 01	435,280	186,201	104
400	SAMSUNG ELECTRONICS (MALAYSIA) SDN BHD	DEC 01	434,809	7,906	672

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MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
401	MARDEC BHD	SEP 01	434,802	(9,252)	914
402	ONKYO (MALAYSIA) SDN BHD	DEC 01	434,118	8,122	664
403	ROBERT BOSCH (MALAYSIA) SDN BHD	DEC 01	432,291	35,908	346
404	SUNROCK (MALAYSIA) SDN BHD	DEC 01	431,696	(166)	870
405	CHIN FOH BHD	JAN 02	431,538	(18,218)	940
406	BANK ISLAM MALAYSIA BHD	JUN 01	431,401	56,383	263
407	TIME ENGINEERING BHD	DEC 01	429,336	(369,328)	993
408	MUDA HOLDINGS BHD	DEC 01	428,302	4,278	751
409	IOI PROPERTIES BHD	JUN 01	426,378	203,847	93
410	PEMASARAN SIMEN NEGARA SDN BHD	DEC 01	425,957	6,602	697
411	BUMI ARMADA BHD	DEC 01	425,845	63,492	245
412	UNICO HOLDINGS BHD	MAR 02	424,273	(46,016)	966
413	TNB HIDRO SDN BHD	AUG 01	423,093	36,935	338
414	JARDINE ONESOLUTION HOLDINGS SDN BHD	DEC 01	422,599	(5,591)	904
415	ACIDCHEM INTERNATIONAL SDN BHD	JUN 01	421,919	69,714	232
416	NATIONAL SEMICONDUCTOR SDN BHD	MAY 01	419,312	67,106	239
417	SABAH FOREST INDUSTRIES SDN BHD	JUN 01	417,825	50,779	276
418	F & N DAIRIES (MALAYSIA) SDN BHD	SEP 01	414,893	(2,279)	890
419	AYAMAS FOOD CORPORATION BHD	DEC 01	411,965	21,176	448
420	YTL INDUSTRIES BHD	JUN 01	411,022	67,616	236
421	JOHN HANCOCK LIFE INSURANCE (MALAYSIA) BHD	DEC 01	410,620	42,490	308
422	CHIP LAM SENG BHD	JAN 02	410,557	9,833	632
423	NYLEX (MALAYSIA) BHD	MAY 01	408,985	21,388	446
424	ORNASTEEL ENTERPRISE CORPORATION (M) SDN BHD	NOV 01	406,981	13	868
425	COUNTRY HEIGHTS HOLDINGS BHD	DEC 01	406,708	(47,093)	967
426	UNICO TECHNOLOGY BHD	MAR 02	405,559	(43,523)	962
427	PROJEK PENYELENGGARAAN LEBUHRAYA BHD	DEC 01	403,806	47,340	288
428	IDEMITSU SM (MALAYSIA) SDN BHD	DEC 01	402,023	(38,435)	961
429	FELDA TRADING SDN BHD	DEC 01	399,012	3,026	785
430	S.E.H. (SHAH ALAM) SDN BHD	DEC 01	397,130	32,065	369
431	MOTOSIKAL & ENJIN NASIONAL SDN BHD	MAR 02	396,683	44,384	301
432	ASIA LIFE (M) BHD	DEC 01	396,185	24,738	410
433	PREMIER MILK (MALAYA) SDN BHD	SEP 01	396,002	10,023	621
434	PAN MALAYSIA CORPORATION BHD	DEC 01	395,295	60,284	254
435	SHELL SABAH SELATAN SDN BHD	DEC 01	393,046	202,036	95
436	OCEAN CAPITAL BHD	DEC 01	392,977	(45,955)	965
437	LOW LEONG SOO & BROTHERS SDN BHD	DEC 01	389,681	24,276	416
438	DEUTSCHE BANK (MALAYSIA) BHD	DEC 01	389,118	88,883	188
439	DANCOM TELECOMMUNICATIONS (M) SDN BHD	DEC 01	389,105	8,194	662
440	ELTECH ELECTRONICS TECHNOLOGY (MALAYSIA) SDN BHD	DEC 01	387,988	26,062	403
441	SCG INDUSTRIES MALAYSIA SDN BHD	DEC 01	387,396	(10,575)	916
442	ROAD BUILDER (M) HOLDINGS BHD	JUN 01	386,848	93,700	178
443	PERNEC CORPORATION BHD	JAN 02	386,016	24,580	411
444	MATSUSHITA ELECTRONIC MOTOR (MALAYSIA) SDN BHD	MAR 02	382,722	214	862
445	AMWAY (MALAYSIA) HOLDINGS BHD	AUG 01	381,744	74,191	221
446	EDARAN MODENAS SDN BHD	MAR 02	381,215	1,555	824
447	SIME SEMBCORP ENGINEERING SDN BHD	JUN 01	380,762	43,056	305
448	DMM SALES SDN BHD	DEC 01	380,571	7,717	677
449	YTL CEMENT BHD	JUN 01	379,380	66,781	240
450	SUMIPUTEH STEEL CENTRE SDN BHD	DEC 01	379,042	18,746	478

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MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
451	AMALGAMATED CONTAINERS BHD	JUN 01	378,931	28,916	385
452	TIMECEL SDN BHD	DEC 01	377,992	(29,999)	958
453	ANN JOO RESOURCES BHD	DEC 01	376,687	23,984	420
454	MITSUMI ELECTRONICS (B.P.) SDN BHD	MAR 02	376,606	9,949	623
455	PK RESOURCES BHD	DEC 01	376,308	9,203	644
456	ISLAND & PENINSULAR BHD	JAN 02	375,160	70,032	231
457	KAMUNTING CORPORATION BHD	MAR 02	375,133	87,292	191
458	ASE ELECTRONICS (M) SDN BHD	DEC 01	374,573	(5,310)	901
459	GENTING SANYEN (MALAYSIA) SDN BHD	DEC 01	372,264	7,162	686
460	GEORGE TOWN HOLDINGS BHD	JUN 01	370,664	(159,170)	985
461	PORT DICKSON POWER BHD	JUN 01	367,537	166,241	113
462	SAPURA TELECOMMUNICATIONS BHD	JAN 02	367,455	4,621	740
463	MALAYSIA BUILDING SOCIETY BHD	DEC 01	367,245	(488,622)	994
464	MALAYSIAN INTERNATIONAL TRADING CORPORATION (JAPAN) SDN BHD	MAR 02	363,558	2,863	788
465	MTD CONSTRUCTION SDN BHD	MAR 02	360,951	9,353	641
466	YEO HIAP SENG TRADING SDN BHD	DEC 01	357,158	4,800	738
467	PETROCHEMICALS (MALAYSIA) SDN BHD	DEC 01	356,879	8,258	661
468	CHUAN HUAT RESOURCES BHD	DEC 01	355,912	6,239	707
469	CAR SEATS (MALAYSIA) SDN BHD	SEP 01	355,422	44,273	302
470	SANMINA-SCI SYSTEMS (MALAYSIA) SDN BHD	JUN 01	355,400	6,125	708
471	EXEL LOGISTICS (MALAYSIA) SDN BHD	DEC 01	352,864	6,306	702
472	MARUICHI MALAYSIA STEEL TUBE BHD	JAN 02	352,320	42,823	306
473	UNI.ASIA GENERAL INSURANCE BHD	MAR 02	350,784	42,009	314
474	SIEMENS MALAYSIA SDN BHD	SEP 01	350,524	32,655	364
475	GOLDEN HOPE PLANTATIONS (PENINSULAR) SDN BHD	JUN 01	348,916	1,995	809
476	COSWAY (M) SDN BHD	APR 01	348,072	13,618	552
477	GUTHRIE PROPERTY DEVELOPMENT HOLDING SDN BHD	DEC 01	348,015	64,580	242
478	SARA KUARI SDN BHD	DEC 01	345,234	32,300	367
479	KLCC (HOLDINGS) BHD	MAR 02	344,867	88,682	189
480	FLAIRIS SDN BHD	JUN 01	344,718	10,274	617
481	ALPHA INDUSTRIES BHD	DEC 01	343,634	(2,077)	887
482	INGRAM MICRO MALAYSIA SDN BHD	DEC 01	342,536	269	859
483	IRIICHI (MALAYSIA) SDN BHD	DEC 01	341,459	336	856
484	HARPERS TRADING (MALAYSIA) SDN BHD	DEC 01	339,864	464	855
485	RENONG BHD	JUN 01	339,492	338,069	56
486	GROUP STEEL CORPORATION (M) SDN BHD	NOV 01	338,775	(10,909)	919
487	RAMATEX TEXTILES INDUSTRIAL SDN BHD	DEC 01	336,152	67,436	237
488	TEKNIK JANAKUASA SDN BHD	AUG 01	334,805	245,805	78
489	MMI INDUSTRIES SDN BHD	JUN 01	334,787	23,984	421
490	UTUSAN MELAYU (MALAYSIA) BHD	DEC 01	334,120	(44,114)	963
491	YANO ELECTRONICS (M) SDN BHD	DEC 01	332,979	1,160	836
492	HITACHI CHEMICAL (JOHOR) SDN BHD	MAR 02	331,540	14,691	535
493	OCB BHD	DEC 01	331,016	13,061	559
494	PUTRAJAYA PERDANA BHD	MAR 02	330,757	78,034	209
495	HONG LEONG PROPERTIES BHD	JUN 01	330,712	11,356	597
496	KINSTEEL BHD	DEC 01	330,710	10,338	615
497	APEX COMMUNICATIONS SDN BHD	DEC 01	329,571	9,350	642
498	CMCM PERNIAGAAN SDN BHD	DEC 01	329,473	4,881	737
499	DUTCH LADY MILK INDUSTRIES BHD	DEC 01	329,045	15,134	528
500	HCM ENGINEERING SDN BHD	DEC 01	328,376	40,800	322

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MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
501	INTEL MICROELECTRONICS (M) SDN BHD	DEC 01	327,315	34,508	357
502	CHIN FOH TRADING SDN BHD	JAN 02	326,189	(8,030)	913
503	ROHM-WAKO ELECTRONICS (MALAYSIA) SDN BHD	MAR 02	324,207	32,969	362
504	NEW ZEALAND MILK (MALAYSIA) SDN BHD	MAY 01	323,810	18,331	484
505	SINAR BERLIAN SDN BHD	DEC 01	323,546	(769)	874
506	DNP HOLDINGS BHD	DEC 01	323,297	17,511	495
507	GOLDEN ARCHES RESTAURANTS SDN BHD	DEC 01	322,957	(13,169)	928
508	ISETAN OF JAPAN SDN BHD	MAR 02	322,766	4,914	734
509	GENTING SANYEN INDUSTRIAL PAPER SDN BHD	DEC 01	322,404	4,104	757
510	DIALOG GROUP BHD	JUN 01	321,834	61,202	253
511	MUDAJAYA CORPORATION BHD	DEC 01	321,803	22,370	438
512	AIC CORPORATION BHD	DEC 01	321,672	7,278	685
513	SUBUR TIASA HOLDINGS BHD	JAN 02	320,825	(20,033)	946
514	SINMAH RESOURCES BHD	JAN 02	320,517	(4,543)	897
515	ROAD BUILDER (M) SDN BHD	JUN 01	320,022	90,397	185
516	JT INTERNATIONAL TOBACCO SDN BHD	DEC 01	319,408	5,178	728
517	CHUAN HUAT HARDWARE (SDN) BHD	DEC 01	318,227	4,086	759
518	MEGA FIRST CORPORATION BHD	JUN 01	315,809	36,880	339
519	DUMEX (MALAYSIA) SDN BHD	DEC 01	313,609	35,375	349
520	KELANG MULTI TERMINAL SDN BHD	DEC 01	313,572	72,300	225
521	EOX GROUP BHD	SEP 01	313,441	19,443	466
522	UNZA HOLDINGS BHD	APR 01	312,441	36,188	343
523	EKOVEST BHD	JUN 01	312,201	10,324	616
524	MURATA ELECTRONICS (MALAYSIA) SDN BHD	MAR 02	311,690	43,450	304
525	FORMOSA PROSONIC INDUSTRIES BHD	MAR 02	310,951	9,458	638
526	PALMCO OIL MILL SDN BHD	JUN 01	310,380	8,354	658
527	CHAROEN POKPHAND HOLDINGS (MALAYSIA) SDN BHD	DEC 01	310,172	20,395	455
528	ACP INDUSTRIES BHD	MAR 02	309,733	34,794	353
529	PROCTER & GAMBLE (MALAYSIA) SDN BHD	JUN 01	308,289	67,649	235
530	DANZAS AEI (MALAYSIA) SDN BHD	DEC 01	307,182	22,921	431
531	HUB SHIPPING SDN BHD	SEP 01	306,849	10,415	612
532	CONSOLIDATED PLANTATIONS BHD	JUN 01	306,630	(2,094)	888
533	SHIN YANG TRADING SDN BHD	AUG 01	306,287	1,947	811
534	WCT CONSTRUCTION SDN BHD	JAN 02	304,702	18,914	476
535	SIME TYRES INTERNATIONAL (M) SDN BHD	JUN 01	304,265	29,404	381
536	SCB DEVELOPMENTS BHD	DEC 01	303,668	107,133	162
537	DAVEX HOLDINGS BHD	DEC 01	303,663	15,636	519
538	AMANAH SHORT DEPOSITS BHD	DEC 01	303,267	102,349	172
539	PRESS METAL BHD	DEC 01	303,252	12,772	566
540	KAI PENG BHD	JUN 01	302,914	(10,589)	917
541	SAMLING PLYWOOD (BINTULU) SDN BHD	JUN 01	302,019	3,959	763
542	PANTAI HOLDINGS BHD	JUN 01	302,010	(160,246)	986
543	BEHN MEYER & CO (M) SDN BHD	DEC 01	301,280	7,130	687
544	EPSON PRECISION (MALAYSIA) SDN BHD	MAR 02	300,113	9,922	626
545	TOPS RETAIL (MALAYSIA) SDN BHD	DEC 01	299,649	(84,891)	980
546	REVERTEX (MALAYSIA) SDN BHD	DEC 01	299,481	24,414	414
547	MAXIS INTERNATIONAL SDN BHD	DEC 01	299,412	113,800	154
548	AIROD SDN BHD	DEC 01	297,758	24,740	409
549	GOODYEAR MARKETING & SALES SDN BHD	DEC 01	296,456	7,405	683
550	SHARP-ROXY APPLIANCES CORPORATION (M) SDN BHD	DEC 01	295,598	6	869

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M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
551	HICOM-GAMUDA DEVELOPMENT SDN BHD	MAR 02	294,457	57,362	262
552	BANENG INDUSTRIES SDN BHD	DEC 01	294,359	13,522	554
553	METTUBE SDN BHD	DEC 01	293,025	19,072	470
554	CHAROEN POKPHAND FEEDMILLS (M) SDN BHD	DEC 01	291,378	14,567	539
555	CARDINAL HEALTH MALAYSIA 211 SDN BHD	JUN 01	290,443	102,906	170
556	COMPUTER SYSTEMS ADVISERS (M) BHD	MAR 02	290,202	22,748	435
557	ABB HOLDINGS SDN BHD	DEC 01	288,805	14,021	546
558	MARDEC PROCESSING SDN BHD.	SEP 01	288,730	(5,049)	899
559	BATES (MALAYSIA) SDN BHD	DEC 01	288,718	1,461	828
560	TAN CHONG MOTOR ASSEMBLIES SDN BHD	DEC 01	287,443	9,187	645
561	PRESTAR RESOURCES BHD	DEC 01	287,372	5,833	712
562	NANYANG PRESS HOLDINGS BHD	JUN 01	286,682	1,654	820
563	KLANG PORT MANAGEMENT SDN BHD	DEC 01	286,671	31,692	370
564	KEMPAS EDIBLE OIL SDN BHD	JUN 01	284,696	8,665	656
565	FIMA MAKMUR SDN BHD	MAR 02	284,462	(60,696)	973
566	DIALOG E & C SDN BHD	JUN 01	284,458	37,025	337
567	JOHNSON & JOHNSON SDN BHD	DEC 01	284,439	40,720	323
568	MALAYSIAN SHEET GLASS BHD	DEC 01	283,642	5,437	719
569	CEEMAX TECHNOLOGY SDN BHD	JUN 01	283,031	(17,904)	939
570	FORD CONCESSIONAIRES SDN BHD	JUN 01	282,583	3,689	769
571	CHEMQUEST SDN BHD	DEC 01	282,457	16,218	510
572	SIME UEP PROPERTIES BHD	JUN 01	282,100	112,500	155
573	GOODYEAR MALAYSIA BHD	DEC 01	282,041	41,467	318
574	PAOS INDUSTRIES SDN BHD	MAY 01	281,259	14,265	543
575	ALUMINIUM CO OF MALAYSIA BHD	DEC 01	279,997	(698)	873
576	BINTULU PORT HOLDINGS BHD	DEC 01	279,532	117,978	152
577	TAMURA ELECTRONICS (M) SDN BHD	DEC 01	278,881	(1,271)	883
578	AMDB BHD	MAR 02	278,445	(17,592)	935
579	PEMANDANGAN SINAR SDN BHD	MAR 02	278,322	35,900	347
580	MIDCITI RESOURCES SDN BHD	MAR 02	275,579	132,748	137
581	FABER MEDI-SERVE SDN BHD	JUN 01	275,303	12,328	575
582	PAN MALAYSIAN INDUSTRIES BHD	MAR 02	275,051	(71,905)	976
583	PALMAJU EDIBLE OIL SDN BHD	DEC 01	274,939	11,929	585
584	HUA JOO SENG ENTERPRISE BHD	DEC 01	274,776	32,487	365
585	KIMBERLY-CLARK PRODUCTS (M) SDN BHD	DEC 01	273,610	38,543	331
586	HITACHI CONSUMER PRODUCTS (MALAYSIA) SDN BHD	MAR 02	271,552	2,398	798
587	AGROBULK HOLDINGS SDN BHD	DEC 01	271,443	2,937	786
588	HYDRO AGROMATE HOLDINGS SDN BHD	DEC 01	271,330	3,092	783
589	ASPAC LUBRICANTS (MALAYSIA) SDN BHD	DEC 01	269,092	48,979	283
590	EKSONS CORPORATION BHD	MAR 02	268,855	(10,670)	918
591	JOHOR BAHRU FLOUR MILL SDN BHD	DEC 01	268,642	29,586	380
592	WHITE HORSE BHD	DEC 01	268,599	39,701	329
593	METROJAYA BHD	MAR 02	266,306	(1,165)	881
594	HITACHI AIR CONDITIONING PRODUCTS (M) SDN BHD	MAR 02	265,856	1,578	822
595	HAK JAYA SDN BHD	APR 01	264,302	4,612	742
596	BANDAR RAYA DEVELOPMENTS BHD	DEC 01	263,993	86,067	196
597	ALPINE PIPE MANUFACTURING SDN BHD	JUL 01	263,916	10,794	607
598	SINGER (MALAYSIA) SDN BHD	APR 01	263,329	(90,874)	982
599	TRENERGY (MALAYSIA) BHD	DEC 01	263,267	27,737	392
600	MITSUI SUMITOMO INSURANCE (MALAYSIA) BHD	DEC 01	263,062	16,230	509

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M1000. RANK.	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
601	SHARP-ROXY SALES & SERVICE CO (M) SDN BHD	DEC 01	261,736	2,402	797
602	ASEAN BINTULU FERTILIZER SDN BHD	MAR 02	260,978	8,129	663
603	PHILIPS SEMICONDUCTOR SEREMBAN SDN BHD	DEC 01	260,717	(53,426)	971
604	TECK GUAN TRADING SDN BHD	JAN 02	260,614	9,924	625
605	JOHOR PORT BHD	DEC 01	260,419	84,954	198
606	CARRIER INTERNATIONAL SDN BHD	NOV 01	260,200	21,434	444
607	BAN HOE LEONG MARINE SUPPLIES SDN BHD	DEC 01	259,729	8,997	649
608	MUTIARA RINI SDN BHD	DEC 01	259,698	85,626	197
609	GOLD COIN FEEDMILLS (MALAYSIA) SDN BHD	DEC 01	259,385	17,855	491
610	ACHIEVA TECHNOLOGY SDN BHD	DEC 01	258,912	1,044	841
611	ONG SENG CHOO SDN BHD	DEC 01	258,411	6,468	698
612	TRANS RESOURCES CORPORATION SDN BHD	DEC 01	258,367	20,897	450
613	MOLEX (MALAYSIA) SDN BHD	JUN 01	258,042	53,368	271
614	TA ANN HOLDINGS BHD	DEC 01	256,552	49,521	280
615	PERWIRA INDRA SAKTI SDN BHD	MAR 02	256,388	50,084	279
616	MAHKOTA TECHNOLOGIES SDN BHD	DEC 01	256,152	37	867
617	FEDERAL AUTO HOLDINGS BHD	DEC 01	255,474	3,152	781
618	DOLOMITE BHD	JUN 01	255,157	27,343	394
619	AGROMATE (M) SDN BHD	DEC 01	255,108	1,426	831
620	PJ DEVELOPMENT HOLDINGS BHD	JUN 01	254,712	12,269	578
621	RELIANCE PACIFIC BHD	MAR 02	253,827	(11,140)	921
622	YHL HOLDING SDN BHD	DEC 01	253,229	4,901	736
623	KUMPULAN O'CONNOR'S (MALAYSIA) SDN BHD	SEP 01	252,941	5,158	729
624	KONSORTIUM LOGISTIK BHD	DEC 01	252,317	22,941	430
625	CCM CHEMICALS SDN BHD	DEC 01	251,657	14,530	540
626	NATURAL OLEOCHEMICALS SDN BHD	DEC 01	251,140	52,938	272
627	DYNACRAFT INDUSTRIES SDN BHD	JUN 01	250,626	2,095	805
628	SHIN YANG PLYWOOD SDN BHD	JUN 01	250,578	27,741	391
629	MATRIX INTERNATIONAL BHD	APR 01	250,313	9,931	624
630	HONG LEONG YAMAHA MOTOR SDN BHD	JUN 01	250,082	1,139	839
631	MALAYSIAN BULK CARRIERS SDN BHD	DEC 01	249,864	91,000	184
632	MESINIAGA BHD	DEC 01	248,261	26,377	401
633	PERODUA ENGINE MANUFACTURING SDN BHD	DEC 01	248,163	22,881	432
634	RHB SAKURA MERCHANT BANKERS BHD	JUN 01	247,513	102,365	171
635	MANUPLY WOOD INDUSTRIES (S) SDN BHD	DEC 01	247,093	11,040	602
636	SANBUMI HOLDINGS BHD	DEC 01	246,706	29,366	382
637	CHIPPAC MALAYSIA SDN BHD	DEC 01	245,277	(4,897)	898
638	MAGNUM 4D (JOHOR) SDN BHD	DEC 01	244,047	17,190	497
639	SNC INDUSTRIAL LAMINATES SDN BHD	DEC 01	242,649	71	866
640	ANN YAK SIONG HARDWARE SDN BHD	MAR 02	242,378	4,565	744
641	CELCOM TRANSMISSION (M) SDN BHD	DEC 01	242,258	42,412	311
642	GROUP ASSOCIATED (C & L) SDN BHD	JUN 01	240,643	19,117	469
643	XYRATEX (MALAYSIA) SDN BHD	NOV 01	240,564	76,087	215
644	PPB OIL PALMS BHD	DEC 01	239,411	47,150	289
645	SUIWAH CORPORATION BHD	MAY 01	239,308	10,856	606
646	PERUSAHAAN KIMIA GEMILANG SDN BHD	MAY 01	238,796	1,475	827
647	CARGILL FEED SDN BHD	MAY 01	238,703	4,337	747
648	BAYER (MALAYSIA) SDN BHD	DEC 01	238,053	24,319	415
649	SHIN YANG SDN BHD	JUN 01	237,970	6,337	701
650	SOUTHERN ACIDS (M) BHD	APR 01	237,770	48,170	285

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MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
651	TAMCO CORPORATE HOLDINGS BHD	MAY 01	237,335	12,744	567
652	BUMI ARMADA NAVIGATION SDN BHD	DEC 01	236,801	63,674	244
653	FEDERAL AUTO CARS SDN BHD	DEC 01	236,073	2,361	799
654	JAYA TIASA PLYWOOD SDN BHD	APR 01	235,031	(24,508)	952
655	SUMMIT CO (MALAYSIA) SDN BHD	DEC 01	234,913	1,148	838
656	BORNEO SAMUDERA SDN BHD	DEC 01	234,903	41,564	317
657	PETCON (MALAYSIA) SDN BHD	DEC 01	234,186	3,278	779
658	AHMAD ZAKI RESOURCES BHD	DEC 01	234,041	17,154	498
659	TRANS-ASIA SHIPPING CORPORATION BHD	DEC 01	233,815	13,464	556
660	FUJITSU COMPONENT (MALAYSIA) SDN BHD	MAR 02	233,781	(51,302)	969
661	MAMEE-DOUBLE DECKER (M) BHD	DEC 01	233,266	12,878	563
662	BUKIT INDAH (JOHOR) SDN BHD	OCT 01	232,519	74,767	218
663	MERBOK HILIR BHD	DEC 01	232,418	24,190	417
664	MALAYSIA MINING CORPORATION BHD	JAN 02	232,398	196,960	98
665	MINHO (M) BHD	DEC 01	232,068	(18,251)	941
666	YE CHIU METAL SMELTING BHD	DEC 01	232,016	(2,595)	891
667	PUTERI DELIMA SDN BHD	MAR 02	231,864	157,281	118
668	PUTERI NILAM SDN BHD	MAR 02	231,804	152,783	120
669	BHP STEEL (MALAYSIA) SDN BHD	JUN 01	231,630	14,724	534
670	NAGASE (MALAYSIA) SDN BHD	DEC 01	230,883	(1,915)	886
671	PERUSAHAAN SADUR TIMAH MALAYSIA (PERSTIMA) BHD	MAR 02	230,750	18,200	485
672	YEE LEE CORPORATION BHD	DEC 01	230,463	8,350	659
673	SHORUBBER (MALAYSIA) SDN BHD	DEC 01	230,134	49,082	282
674	WARISAN TC HOLDINGS BHD	DEC 01	229,998	36,324	342
675	HONG LEONG YAMAHA DISTRIBUTORS SDN BHD	JUN 01	229,258	710	846
676	AXA AFFIN ASSURANCE BHD	DEC 01	229,237	18,501	480
677	GRAND UNITED HOLDINGS BHD	DEC 01	228,902	18,755	477
678	PACIFIC & ORIENT BHD	SEP 01	228,743	(12,192)	923
679	LEECO REALTY SDN BHD	SEP 01	228,304	12,574	572
680	HICOM-TECK SEE MANUFACTURING MALAYSIA SDN BHD	MAR 02	228,203	14,630	537
681	HOCK SIN LEONG GROUP BHD	SEP 01	228,196	12,589	571
682	MAC FOOD SERVICES (MALAYSIA) SDN BHD	DEC 01	227,556	3,771	768
683	GYMTECH FEEDMILL (MALACCA) SDN BHD	DEC 01	227,401	(2,646)	893
684	AIC TECHNOLOGY SDN BHD	DEC 01	227,089	1,523	825
685	POSSEHL ELECTRONICS (MALAYSIA) SDN BHD	DEC 01	226,668	(25,367)	954
686	LINEAR SEMICONDUCTOR SDN BHD	JUN 01	226,390	125,548	144
687	PETRO-PIPE INDUSTRIES (M) SDN BHD	DEC 01	226,161	19,134	468
688	YTL CEMENT MARKETING SDN BHD	JUN 01	225,845	314	857
689	NIPPON PAINT (MALAYSIA) SDN BHD	DEC 01	225,804	23,225	425
690	CONVENIENCE SHOPPING SDN BHD	JUN 01	225,650	5,788	714
691	PCCS GROUP BHD	MAR 02	225,033	21,596	443
692	CMKS (MALAYSIA) SDN BHD	DEC 01	224,805	605	851
693	AUTO PARTS MANUFACTURERS CO SDN BHD	DEC 01	224,650	30,467	377
694	HONG LEONG MARKETING CO BHD	JUN 01	224,384	5,795	713
695	MAJU STEEL SDN BHD	JUN 01	224,237	3,616	773
696	PAN SARAWAK CO SDN BHD	MAR 02	224,063	5,227	727
697	GLOBAL MARITIME VENTURES BHD	DEC 01	223,968	80,325	205
698	BINA PURI CONSTRUCTION SDN BHD	DEC 01	223,792	6,611	696
699	NORTHPORT (MALAYSIA) BHD	DEC 01	223,585	60,173	255
700	3M MALAYSIA SDN BHD	DEC 01	223,559	34,278	359

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M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
701	SILVERSTONE BHD	JUN 01	223,335	8,058	665
702	PAN SARAWAK HOLDINGS SDN BHD	MAR 02	223,276	7,638	678
703	MAGNUM 4D (EAST MALAYSIA) SDN BHD	DEC 01	222,749	13,685	550
704	UNITED PLANTATIONS BHD	DEC 01	222,538	30,753	376
705	ENGTEX GROUP BHD	DEC 01	222,431	19,462	463
706	ASIA PACIFIC LAND BHD	DEC 01	222,067	(28,416)	957
707	TAMEX TIMBER SDN BHD	JUN 01	221,855	32,205	368
708	SASCO SDN BHD	JAN 02	221,227	2,556	792
709	SOUTHERN WIRE INDUSTRIES (MALAYSIA) SDN BHD	DEC 01	220,975	(2,822)	894
710	KFC MANUFACTURING SDN BHD	DEC 01	220,907	(321)	872
711	GUARDIAN PHARMACY (M) SDN BHD	DEC 01	220,649	15,155	527
712	ROYAL & SUN ALLIANCE INSURANCE (M) BHD	DEC 01	220,088	29,642	379
713	BCM ELECTRONICS CORPORATION SDN BHD	SEP 01	219,854	5,595	718
714	TIME REACH SDN BHD	DEC 01	219,340	(17,865)	938
715	MITRAJAYA HOLDINGS BHD	DEC 01	219,126	18,030	489
716	ECS KUSH SDN BHD	DEC 01	218,977	3,954	764
717	PELANGI BHD	MAR 02	218,725	45,121	296
718	LEIN HING HOLDINGS BHD	DEC 01	218,665	6,620	695
719	SMPC CORPORATION BHD	JAN 02	218,411	(14,759)	933
720	PUTERI INTAN SDN BHD	MAR 02	218,356	133,221	136
721	PETRONAS METHANOL (LABUAN) SDN BHD	MAR 02	218,262	39,956	327
722	IREKA CORPORATION BHD	MAR 02	217,481	4,270	752
723	SHANGRI-LA HOTELS (MALAYSIA) BHD	DEC 01	217,130	(14,348)	931
724	TIM ELECTRONICS SDN BHD	MAR 02	216,947	20,535	453
725	GUOCERA MARKETING SDN BHD	JUN 01	216,892	172	863
726	MUDA PAPER MILLS SDN BHD	DEC 01	216,847	(5,316)	902
727	BUILDCON CONCRETE SDN BHD	JUN 01	216,210	6,404	700
728	CHOO BEE METAL INDUSTRIES BHD	DEC 01	215,975	18,182	487
729	HEITECH PADU BHD	DEC 01	215,822	40,281	326
730	OGP TECHNICAL SERVICES SDN BHD	MAR 02	214,856	70,822	227
731	HLB UNIT TRUST MANAGEMENT BHD	JUN 01	214,849	3,772	767
732	LEONG HUP CONTRACT FARMING SDN BHD	MAR 02	214,469	1,182	835
733	TYCO ELECTRONICS (MALAYSIA) SDN BHD	SEP 01	214,040	14,998	530
734	PEMBINAAN PUNCA CERGAS SDN BHD	DEC 01	213,200	10,357	614
735	JASMINE FOOD CORPORATION SDN BHD	DEC 01	211,859	4,904	735
736	GARDENIA BAKERIES (K.L.) SDN BHD	DEC 01	211,623	16,937	499
737	MAYBAN GENERAL ASSURANCE BHD	JUN 01	210,442	3,344	776
738	MOCCIS TRADING SDN BHD	DEC 01	210,378	13,506	555
739	NASMAYA JUARA SDN BHD	DEC 01	210,215	9,856	630
740	NIKKO ELECTRONICS BHD	DEC 01	210,159	3,076	784
741	SIEMENS POWER GENERATION ASIA PACIFIC SDN BHD	SEP 01	209,981	13,211	558
742	HARRISONS TRADING (PENINSULAR) SDN BHD	DEC 01	209,941	(4,345)	896
743	SHIN YANG PLYWOOD (BINTULU) SDN BHD	JUN 01	209,810	24,536	412
744	PPES WORKS (SARAWAK) SDN BHD	DEC 01	209,593	10,996	604
745	PREMIUM VEGETABLE OILS BHD	DEC 01	208,913	7,002	688
746	RIMBUNAN HIJAU SDN BHD	JUN 01	208,834	2,534	794
747	BAN SENG GUAN SDN BHD	DEC 01	208,597	530	854
748	PEREMBA CONSTRUCTION SDN BHD	DEC 01	208,585	15,205	526
749	POLYPLASTICS ASIA PACIFIC SDN BHD	DEC 01	208,521	4,210	753
750	SELANGOR PROPERTIES BHD	OCT 01	207,680	58,372	261

BERDASARKAN PULANGAN /JUALAN
RANKED BY TURNOVER / SALES

MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
751	GLOBETRONICS TECHNOLOGY BHD	DEC 01	207,454	22,460	436
752	TASEK CORPORATION BHD	JUN 01	206,670	32,722	363
753	ICI PAINTS (MALAYSIA) SDN BHD	DEC 01	206,508	44,440	300
754	POS MALAYSIA & SERVICES HOLDINGS BHD	DEC 01	206,028	19,784	459
755	CMS CEMENT SDN BHD	DEC 01	205,672	49,311	281
756	POFACHEM (M) SDN BHD	APR 01	205,311	50,492	277
757	ZELLECO CONSTRUCTION SDN BHD	AUG 01	205,110	9,572	635
758	SEBOR (SARAWAK) MARKETING & SERVICES SDN BHD	DEC 01	204,528	1,739	815
759	MITSUI COPPER FOIL (MALAYSIA) SDN BHD	MAR 02	204,476	(7,362)	912
760	TA ENTERPRISE BHD	JAN 02	204,066	6,853	691
761	NGIU KEE CORPORATION (M) BHD	DEC 01	203,892	(52,715)	970
762	FACB INDUSTRIES INCORPORATED BHD	JUN 01	203,798	6,852	692
763	KIM HIN INDUSTRY BHD	DEC 01	203,584	20,114	457
764	NICOM STEEL CENTRE (MALAYSIA) SDN BHD	DEC 01	203,405	2,552	793
765	SAIPEM ASIA SDN BHD	DEC 01	202,984	11,872	588
766	KUMPULAN EMAS BHD	JUL 01	202,930	35,046	351
767	PRECIOUS JEWELLERY SDN BHD	JUL 01	202,703	8,012	668
768	CHAROEN POKPHAND JAYA FARM (M) SDN BHD	DEC 01	202,497	7,387	684
769	MALAYSIA AIRPORTS SDN BHD	DEC 01	202,185	55,561	266
770	FOREMOST HOLDINGS BHD	DEC 01	201,277	(6,396)	908
771	FELDA PLANTATIONS SDN BHD	DEC 01	201,069	41,044	321
772	DKLS INDUSTRIES BHD	DEC 01	200,971	15,974	514
773	DELLOYD VENTURES BHD	DEC 01	200,768	38,542	332
774	SARAWAK ENTERPRISE CORPORATION BHD	DEC 01	199,894	124,031	146
775	IGB CORPORATION BHD	DEC 01	199,880	61,926	249
776	ASIATIC DEVELOPMENT BHD	DEC 01	199,863	87,149	192
777	PEMBINAAN MITRAJAYA SDN BHD	DEC 01	199,610	5,785	715
778	ADVANCE SYNERGY BHD	DEC 01	199,530	(13,885)	929
779	HEVEAFIL SDN BHD	DEC 01	199,499	(4,277)	895
780	KUMPULAN PERANGSANG SELANGOR BHD	DEC 01	199,205	62,754	247
781	WHITE HORSE MARKETING SDN BHD	DEC 01	198,329	9,059	648
782	FATRIC SDN BHD	FEB 02	197,284	1,446	829
783	MALAYSIAN ELECTRONICS MATERIALS SDN BHD	MAR 02	196,983	12,403	573
784	AKZO NOBEL INDUSTRIES SDN BHD	DEC 01	196,526	53,387	270
785	BATA (MALAYSIA) SDN BHD	DEC 01	195,610	18,445	482
786	TECHNIP FAR EAST SDN BHD	DEC 01	194,473	52,345	273
787	SYN TAI HUNG CORPORATION SDN BHD	DEC 01	193,627	7,567	680
788	BATA MARKETING SDN BHD	DEC 01	193,489	14,754	533
789	RYOSAN (MALAYSIA) SDN BHD	DEC 01	193,306	4,092	758
790	ORIENTAL SUMMIT INDUSTRIES SDN BHD	MAR 02	193,297	15,050	529
791	OSK HOLDINGS BHD	DEC 01	192,034	(9,901)	915
792	GUOLENE PACKAGING INDUSTRIES BHD	JUN 01	191,254	15,657	518
793	SHIN-ETSU POLYMER (MALAYSIA) SDN BHD	DEC 01	191,194	23,181	426
794	BUMI HIWAY VENTURES BHD	JUN 01	191,127	14,485	541
795	GEOLOGISTICS (MALAYSIA) SDN BHD	DEC 01	191,032	2,417	796
796	GIMMILL INDUSTRIAL (M) SDN BHD	DEC 01	190,816	15,673	517
797	FLUOR DANIEL INTERNATIONAL (MALAYSIA) SDN BHD	DEC 01	190,806	1,518	826
798	SIS DISTRIBUTION (M) SDN BHD	DEC 01	190,467	678	847
799	INDUSTRIAL CONCRETE PRODUCTS BHD	JUN 01	190,359	8,690	654
800	HO HUP CONSTRUCTION CO BHD	DEC 01	190,227	(23,543)	950

BERDASARKAN PULANGAN /JUALAN

RANKED BY TURNOVER / SALES

MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
801	NITTO DENKO ELECTRONICS (MALAYSIA) SDN BHD	MAR 02	189,834	7,808	675
802	SHIN YANG INDUSTRIES (BINTULU) SDN BHD	JUN 01	189,715	14,064	545
803	GREEN RIVER WOOD & LUMBER MFG. SDN BHD	DEC 01	189,181	19,571	461
804	GLAXOSMITHKLINE CONSUMER HEALTHCARE SDN BHD	DEC 01	189,097	30,387	378
805	ALLIANCE MERCHANT BANK BHD	MAR 02	188,728	15,352	524
806	KUALA SIDIM BHD	DEC 01	188,540	42,274	312
807	KENMARK INDUSTRIAL CO (M) BHD	DEC 01	188,223	19,455	465
808	SMK ELECTRONICS (MALAYSIA) SDN BHD	MAR 02	188,203	301	858
809	UNISEM (M) BHD	DEC 01	187,907	(1,057)	880
810	PERAK-HANJOONG SIMEN SDN BHD	DEC 01	187,819	16,309	508
811	HIAP TECK HARDWARE SDN BHD	JUL 01	187,718	3,476	774
812	KAJIMA (MALAYSIA) SDN BHD	DEC 01	187,272	12,044	581
813	HO WAH GENTING BHD	DEC 01	186,275	10,172	618
814	TSH RESOURCES BHD	DEC 01	185,789	19,458	464
815	ABN AMRO BANK BHD	DEC 01	185,504	11,391	596
816	JOS DISTRIBUTION (MALAYSIA) SDN BHD	DEC 01	185,078	4,344	746
817	TAIKO MARKETING SDN BHD	JUN 01	184,397	9,417	639
818	JERASIA CAPITAL BHD	DEC 01	184,049	12,263	579
819	KIMBERLY-CLARK TRADING (M) SDN BHD	DEC 01	183,536	16,131	512
820	NAIM CENDERA SDN BHD	DEC 01	183,313	39,720	328
821	KISWIRE SDN BHD	DEC 01	183,045	15,515	522
822	TOYO ENGINEERING & CONSTRUCTION SDN BHD	DEC 01	182,585	1,567	823
823	BERJAYA CAPITAL BHD	APR 01	181,843	(5,961)	907
824	PETRA PERDANA BHD	DEC 01	181,811	15,928	515
825	PERUSAHAAN CHAN CHOO SING SDN BHD	MAR 02	181,348	4,281	750
826	CHUAN HUAT INDUSTRIAL MARKETING SDN BHD	DEC 01	181,187	1,965	810
827	SERVEX (MALAYSIA) SDN BHD	DEC 01	180,872	4,025	761
828	TRANSMILE GROUP BHD	DEC 01	180,692	30,941	372
829	GUOCERA HOLDINGS SDN BHD	JUN 01	180,476	14,857	531
830	MAH SING GROUP BHD	DEC 01	180,413	5,900	711
831	MAYBAN DISCOUNT BHD	JUN 01	180,338	38,977	330
832	LEE RUBBER (SELANGOR) SDN BHD	DEC 01	180,093	5,047	731
833	PEMBINAAN SAHABATJAYA SDN BHD	JUN 01	180,084	10,721	608
834	UAC BHD	DEC 01	179,496	42,468	309
835	KEDAH CEMENT MARKETING SDN BHD	DEC 01	179,056	2,145	804
836	LOH & LOH CORPORATION BHD	DEC 01	178,695	27,077	395
837	PETALING GARDEN BHD	DEC 01	178,445	61,503	252
838	CARRIER (M) SDN BHD	NOV 01	178,185	14,679	536
839	CHG PLYWOOD SDN BHD	DEC 01	178,036	(15,151)	934
840	HEAP LEE TRADING CO SDN BHD	DEC 01	177,841	1,754	814
841	CS METAL INDUSTRIES (M) SDN BHD	APR 01	177,458	10,565	610
842	KIMGRES MARKETING SDN BHD	DEC 01	177,437	7,524	681
843	SAMLING PLYWOOD (BARAMAS) SDN BHD	JUN 01	177,120	13,389	557
844	GLOBAL OFFSHORE MALAYSIA SDN BHD	DEC 01	176,815	6,810	693
845	PAOS HOLDINGS BHD	MAY 01	176,691	14,854	532
846	TRANSMILE AIR SERVICES SDN BHD	DEC 01	176,339	22,019	440
847	ICP MARKETING SDN BHD	JUN 01	176,123	1,830	812
848	SETIA PUTRAJAYA SDN BHD	OCT 01	176,121	6,258	705
849	MARCONI (MALAYSIA) SDN BHD	DEC 01	175,894	538	853
850	MALAYSIA MILK SDN BHD	DEC 01	175,862	11,915	587

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MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
851	SMCI GLOBETRONICS TECHNOLOGY INDUSTRIES SDN BHD	DEC 01	175,586	6,093	709
852	HITACHI HIGH-TECHNOLOGIES IPC (MALAYSIA) SDN BHD	MAR 02	175,463	3,333	777
853	PAINT MARKETING CO (M) SDN BHD	DEC 01	175,457	6,432	699
854	INABATA MALAYSIA SDN BHD	DEC 01	175,195	929	844
855	DOVECHEM HOLDINGS (M) SDN BHD	DEC 01	175,183	5,323	726
856	CHIN WELL HOLDINGS BHD	MAY 01	175,011	19,527	462
857	HSL ELECTRICAL & ELECTRONICS SDN BHD	SEP 01	175,002	5,364	721
858	INGRESS CORPORATION BHD	JAN 02	174,575	37,223	336
859	MITSUMI (SEGAMAT) SDN BHD	MAR 02	174,484	3,643	772
860	KEKAL KAYANGAN SDN BHD	MAR 02	174,418	546	852
861	AIRASIA SDN BHD	MAR 02	173,937	230	860
862	SCOTT & ENGLISH ELECTRONICS SDN BHD	MAR 02	173,466	10,665	609
863	PERAK CORPORATION BHD	DEC 01	173,207	28,247	390
864	HOE SENG CHAN CO SDN BHD	DEC 01	172,579	142	865
865	NEW PORT BULK TERMINAL SDN BHD	DEC 01	172,436	2,066	806
866	FIAMMA HOLDINGS BHD	SEP 01	172,144	6,242	706
867	FRITZ LOGISTICS SERVICES (M) SDN BHD	MAY 01	171,637	7,591	679
868	DIC (MALAYSIA) SDN BHD	DEC 01	171,503	3,260	780
869	SHL CONSOLIDATED BHD	MAR 02	171,243	15,453	523
870	AKN TECHNOLOGY BHD	MAR 02	170,890	12,890	562
871	FORMIS (MALAYSIA) BHD	MAR 02	170,875	24,883	408
872	O'CONNOR'S TRADING SDN BHD	SEP 01	170,865	(5,764)	905
873	SUBRAMANIAM PLASTIC & METAL SDN BHD	DEC 01	170,079	4,105	756
874	TH UNIVERSAL BUILDERS SDN BHD	DEC 01	169,611	9,910	628
875	PROLEXUS BHD	JUL 01	169,185	7,833	674
876	VOLVO MALAYSIA SDN BHD	DEC 01	168,908	15,307	525
877	CCK CONSOLIDATED HOLDINGS BHD	JUN 01	168,192	6,282	703
878	SCIENTEX INCORPORATED BHD	JUL 01	168,142	8,017	667
879	SHARIKAT KIM LOONG SDN BHD	JAN 02	168,076	30,897	373
880	SWEDISH MOTOR ASSEMBLIES SDN BHD	DEC 01	168,032	11,430	595
881	ENG TEKNOLOGI HOLDINGS BHD	DEC 01	167,820	16,216	511
882	APM AUTO ELECTRICS SDN BHD	DEC 01	167,694	21,214	447
883	AMRA RESOURCES SDN BHD	JUN 01	167,056	84,556	200
884	FUJI PHOTO FILM (MALAYSIA) SDN BHD	FEB 02	166,973	9,411	640
885	KILANG GULA FELDA PERLIS SDN BHD	DEC 01	166,488	2,875	787
886	MONSANTO (MALAYSIA) SDN BHD	DEC 01	166,452	(2,198)	889
887	PROTON MC METAL SDN BHD	MAR 02	166,416	1,350	832
888	ABBOTT LABORATORIES (MALAYSIA) SDN BHD	NOV 01	166,193	12,891	561
889	MAJU ALAT GANTI SDN BHD	JUN 01	166,173	3,374	775
890	WATSON'S PERSONAL CARE STORES SDN BHD	DEC 01	166,083	14,000	548
891	MMC ENGINEERING GROUP BHD	JAN 02	166,014	11,000	603
892	MALAYSIAN AUTOMOTIVE LIGHTING SDN BHD	DEC 01	165,738	36,050	344
893	PADINI HOLDINGS BHD	JUN 01	165,712	9,852	631
894	CCM FERTILIZERS SDN BHD	DEC 01	165,513	1,136	840
895	LANDMARKS BHD	DEC 01	165,507	18,098	488
896	AMI INSURANS BHD	AUG 01	165,238	5,338	724
897	GOKO CAMERA (M) SDN BHD	JUN 01	164,505	(6,671)	911
898	ARAB-MALAYSIAN CORPORATION BHD	MAR 02	163,697	66,399	241
899	PARAMOUNT CORPORATION BHD	DEC 01	163,695	34,780	354
900	GMPC CORPORATION SDN BHD	DEC 01	163,491	(847)	877

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MALAYSIA 1000

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Rank
901	KTS LOGS MARKETING SDN BHD	DEC 01	163,251	(857)	878
902	LAFARGE ROOFING HOLDINGS SDN BHD	DEC 01	163,239	37,550	334
903	KIAN JOO PACKAGING SDN BHD	DEC 01	163,118	24,031	419
904	BATU KAWAN BHD	SEP 01	162,512	89,925	187
905	MALAYSIA STEEL WORKS (KL) BHD	DEC 01	162,342	11,048	601
906	DIMENSI TUAH SDN BHD	DEC 01	162,004	19,741	460
907	RUBBERFLEX SDN BHD	DEC 01	161,866	8,461	657
908	HUP SENG INDUSTRIES BHD	DEC 01	161,740	18,949	473
909	A CLOUET & CO (KUALA LUMPUR) SDN BHD	DEC 01	161,630	5,413	720
910	LFD MANUFACTURING SDN BHD	DEC 01	161,535	(255)	871
911	PENGEDAR BAHAN PERTANIAN SDN BHD	DEC 01	161,338	159	864
912	LEISURE HOLIDAYS BHD	DEC 01	161,161	(5,191)	900
913	KANZEN TETSU SDN BHD	JUN 01	160,936	1,717	817
914	VARIA PERDANA SDN BHD	DEC 01	160,696	43,979	303
915	KAWASHO STEEL PROCESSING CENTRE SDN BHD	DEC 01	160,616	768	845
916	COLD ROLLING INDUSTRY (MALAYSIA) SDN BHD	JAN 02	160,194	19,053	471
917	ACOUSTECH BHD	MAR 02	160,138	13,526	553
918	KONTENA NASIONAL BHD	DEC 01	160,078	10,162	620
919	AUSTRAL ENTERPRISES BHD	JAN 02	159,985	23,157	427
920	KENTZ MEPC (MALAYSIA) SDN BHD	DEC 01	159,939	4,048	760
921	METAL RECLAMATION BHD	DEC 01	158,985	(14,078)	930
922	SKF BEARING INDUSTRIES (MALAYSIA) SDN BHD	DEC 01	158,978	11,782	590
923	MERBOK MDF SDN BHD	DEC 01	158,775	13,993	549
924	TAIKO CLAY CHEMICALS SDN BHD	DEC 01	158,712	45,801	293
925	HITACHI CABLE (JOHOR) SDN BHD	DEC 01	158,522	(1,540)	884
926	HPD SYSTEMS SDN BHD	DEC 01	158,104	8,033	666
927	PATIMAS COMPUTERS BHD	DEC 01	157,757	8,298	660
928	UNIQEMA (MALAYSIA) SDN BHD	DEC 01	157,548	17,625	493
929	MIRI PARTS TRADING SDN BHD	JAN 02	157,103	4,957	732
930	LOH & LOH CONSTRUCTIONS SDN BHD	DEC 01	156,721	23,091	429
931	KNOWLES ELECTRONICS (MALAYSIA) SDN BHD	DEC 01	156,564	16,341	507
932	TRISILCO FOLEC SDN BHD	DEC 01	156,424	12,824	564
933	HUME CEMBOARD BHD	JUN 01	156,416	29,118	383
934	PEMBINAAN PAKATAN BINASETIA SDN BHD	DEC 01	155,997	18,512	479
935	KINTRON BHD	DEC 01	155,876	10,445	611
936	TETRA PAK (MALAYSIA) SDN BHD	DEC 01	155,338	3,680	770
937	LINGKARAN TRANS KOTA HOLDINGS BHD	MAR 02	155,210	134,818	132
938	JERNEH ASIA BHD	DEC 01	154,725	35,166	350
939	HEIDELBERG MALAYSIA SDN BHD	MAR 02	154,466	1,773	813
940	COTRA ENTERPRISES SDN BHD	DEC 01	153,831	11,468	594
941	BRITANNIA BRANDS (MALAYSIA) SDN BHD	DEC 01	153,629	14,234	544
942	NEGARA PROPERTIES (M) BHD	JUN 01	153,102	6,975	689
943	TOTOKU (MALAYSIA) SDN BHD	DEC 01	153,077	(1,213)	882
944	BECHTEL BINA (MALAYSIA) SDN BHD	DEC 01	152,993	1,997	808
945	BORMILL SDN BHD	DEC 01	152,713	5,336	725
946	TANASHIN (MALACCA) SDN BHD	MAR 02	152,683	5,356	722
947	LB ALUMINIUM BHD	APR 01	152,509	16,391	506
948	SCS COMPUTER SYSTEMS SDN BHD	DEC 01	152,199	9,895	629
949	ORACLE CORPORATION MALAYSIA SDN BHD	MAY 01	151,580	44,729	299
950	PROSPER PALM OIL MILL SDN BHD	DEC 01	151,015	12,199	580

M1000 RANK	COMPANY NAME	Year Ended	Turnover 2002/2001 RM'000	Profit Before Tax 2002/2001 RM'000	Ra
951	MOBILE DISTRIBUTON (M) SDN BHD	DEC 01	150,929	938	8
952	RICHE MONDE SDN BHD	DEC 01	150,780	5,109	7
953	AMANAH SAHAM NASIONAL BHD	DEC 01	150,687	40,301	3
954	TOYOTA TSUSHO (MALAYSIA) SDN BHD	DEC 01	150,668	1,728	8
955	FUJIKURA FEDERAL CABLES SDN BHD	DEC 01	150,550	(12,262)	9
956	UNITED MALAYAN LAND BHD	DEC 01	150,521	14,585	5
957	FELDA AGRICULTURAL SERVICES SDN BHD	DEC 01	150,502	16,528	5
958	LATITUDE TREE HOLDINGS BHD	JUN 01	150,254	15,607	5
959	KVC ELECTRIC (M) SDN BHD	DEC 01	150,224	21,846	4
960	FAIRCHILD SEMICONDUCTOR (OPTOELECTRONICS) SDN BHD	DEC 01	149,932	(2,641)	8
961	SIME TYRES MARKETING SDN BHD	JUN 01	149,901	11,504	5
962	TOMEN INTERNATIONAL (M) SDN BHD	MAR 02	149,650	9,919	6
963	MARDEC INTERNATIONAL SDN BHD	SEP 01	149,446	661	8
964	GOLDEN PHAROS BHD	DEC 01	149,416	(17,730)	9
965	BODY FASHION (M) SDN BHD	DEC 01	148,252	20,555	4
966	LAI LAI WHOLESALE MART SDN BHD	MAY 01	148,235	8,970	6
967	INTRIA BHD	JUN 01	148,183	105,310	1
968	ONKYO ELECTRIC (MALAYSIA) SDN BHD	DEC 01	147,747	4,118	7
969	ECS ASTAR SDN BHD	DEC 01	147,513	616	8
970	KPJ HEALTHCARE BHD	DEC 01	147,503	17,532	4
971	KOTA TRADING CO SDN BHD	DEC 01	146,620	(23,835)	9
972	AIR PRODUCTS STB SDN BHD	SEP 01	146,439	12,935	5
973	FELDA ENGINEERING SERVICES SDN BHD	DEC 01	146,246	11,924	5
974	TOSHIBA SALES & SERVICES SDN BHD	MAR 02	146,065	4,323	7
975	IKEA HANDEL SDN BHD	AUG 01	146,035	938	8
976	HPI RESOURCES BHD	MAY 01	145,536	8,684	6
977	MAGNUM 4D (PENANG) SDN BHD	DEC 01	145,140	8,742	6
978	PILECON ENGINEERING BHD	DEC 01	144,978	(73,366)	9
979	KHSB MARKETING SDN BHD	SEP 01	144,737	4,699	7
980	TDM BHD	DEC 01	144,709	(26,608)	9
981	HOCK SENG LEE BHD	DEC 01	144,537	11,203	6
982	TNB ENGINEERING & CONSULTANCY SDN BHD	AUG 01	144,528	4,618	7
983	MABUCHI MOTOR (MALAYSIA) SDN BHD	DEC 01	144,508	4,946	7
984	SOUTHERN PIPE INDUSTRY (MALAYSIA) SDN BHD	DEC 01	144,414	(18,700)	9
985	PIE INDUSTRIAL BHD	DEC 01	144,384	10,931	6
986	KOBE COPPER (MALAYSIA) SDN BHD	DEC 01	144,335	2,257	8
987	TOTOKIKI (MALAYSIA) SDN BHD	DEC 01	144,091	639	8
988	KIMBLE FURNITURE CORPORATION (M) SDN BHD	DEC 01	143,804	15,603	5
989	PPSC INDUSTRIES SDN BHD	DEC 01	143,777	20,894	4
990	LABUR BINA SDN BHD	JAN 02	143,695	17,793	4
991	PLANET TECHNOLOGY (M) SDN BHD	DEC 01	143,660	1,249	8
992	SUZUKI ASSEMBLERS MALAYSIA SDN BHD	JUN 01	143,117	6,909	6
993	LUEN HENG AGENCY SDN BHD	DEC 01	142,972	4,376	7
994	PERUMAHAN KINRARA BHD	JAN 02	142,968	46,468	2
995	AJINOMOTO (MALAYSIA) BHD	MAR 02	142,648	13,627	5
996	INTI UNIVERSAL HOLDINGS BHD	DEC 01	142,617	34,650	3
997	MFM FEEDMILL SDN BHD	DEC 01	142,589	(985)	8
998	PHN INDUSTRY SDN BHD	MAR 02	142,461	26,957	3
999	TIONG TOH SIONG & SONS SDN BHD	JUN 01	142,364	11,784	5
1000	NV MULTI CORPORATION BHD	DEC 01	142,033	36,749	3

APPENDIX B

TABLE FOR DETERMINING NEEDED SIZES OF A RANDOMLY CHOSEN SAMPLE FROM GIVEN FINITE POPULATION OF *N* CASES SUCH THAT THE SAMPLE PROPOTION *P* WILL BE WITHIN ±.05 OF THE POPULATION PROPOTION *P* WITH 95 PERCENT LEVEL OF CONFIDENCE

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note : *N* is population size ; *S* is sample size

APPENDIX C

TRAINING NEEDS ANALYSIS (TNA) PRACTICES: A SURVEY OF THE TOP 1000 CORPORATE COMPANIES IN MALAYSIA (VOT 75171)

HUMAN RESOURCE DIRECTOR / MANAGER

Dear Sir / Madam,

We are conducting a survey on the approaches and methods used by organizations to analyze training needs involving the top 1000 corporate companies in Malaysia as listed in the *Malaysian Top Corporate Directory 2003*. The intention of this survey is to understand how companies make decisions regarding selection of training programs and training participants.

We believe that practice and theories should go hand in hand, and in order to achieve this, collaboration between practitioners and theorists / academicians is needed. We hope that findings of the study would be beneficial to both parties, especially on aspects of how to put applications of TNA theories into practice in order to assist industries to maximize the potential of their workforce.

With regard to this, **we kindly request a moment of your time to participate in the survey by filling in this questionnaire.** For your information, the questionnaire should be answered by **staff who is directly involved in making TNA decisions in your organization.**

We shall be most grateful if you could complete and return the questionnaire to us by e-mail / mail / fax by ..... **2005**. You have our assurance that both the identity and details of your organization will be kept strictly confidential. Should you wish, a summary of the study findings can be sent to you free of charge upon request.

We would like to further invite you to participate in a Lucky Draw contest to win a digital camera worth RM1000 by filling in your contact details at the end of this questionnaire.

Thank you very much for your time and attention.

Yours faithfully,

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Salwa Abd. Patah

SECTION A : BACKGROUND OF ORGANIZATION

Please tick (√) at the appropriate box or fill in the blanks to describe your organization.

1. Types of organization sector:

- ☐ Agriculture, forestry and fishing
- ☐ Mining and quarrying
- ☐ Manufacturing
- ☐ Construction
- ☐ Transport, storage and communication
- ☐ Government services
- ☐ Finance, insurance, business services and real estate
- ☐ Other sector (please state) .....

2. Nationality of parent company:

- ☐ Malaysian
- ☐ American
- ☐ Anglo-Dutch
- ☐ British
- ☐ German
- ☐ Japanese
- ☐ Taiwanese
- ☐ Other (please state) .....

3. Number of employees: .....

4. Location of organization:

- ☐ Johore
- ☐ Malacca
- ☐ Negeri Sembilan
- ☐ Pahang
- ☐ Kuala Lumpur
- ☐ Selangor
- ☐ Perak
- ☐ Kedah
- ☐ Pulau Pinang
- ☐ Kelantan
- ☐ Terengganu
- ☐ Perlis
- ☐ Sabah
- ☐ Sarawak

5. Years of operation in Malaysia: ..... years

6. Does your organization have an ISO certificate?

☐ Yes ☐ No

7. Does your organization have a separate unit responsible for training affairs?

☐ Yes ☐ No

If *no*, please state who is responsible for your organization's training affair.

.....

8. Does your organization have specific staff responsible for managing related training matters?

☐ Yes ☐ No

If *no*, please state who is responsible for managing related training matters in your organization

.....

9. Approximately how much does your organization spend annually on training and development activities?

RM .....

SECTION B : BACKGROUND OF RESPONDENT

Please tick (√) at the appropriate box or fill in the blanks to describe your background information.

1. Job title: .....

2. Working experience in current job: ..... years

3. Do you have any relevant qualification in HRM / HRD / training and development?

☐ Yes ☐ No

4. Have you attended course(s) on how to conduct TNA?

☐ Yes ☐ No

5. Are you a member of any professional association in management / HRM / HRD?

☐ Yes ☐ No

6. Do you subscribe to relevant publications to update your knowledge relevant to your field of practice?

☐ Yes ☐ No

7. Please describe the extent to which you continuously update your knowledge relevant to your field of practice.

☐ Never ☐ Rare ☐ Seldom ☐ Frequent ☐ Always

SECTION C : NATURE OF TRAINING NEEDS

Please circle to indicate the extent to which the following statements describe training conducted in your organization using the scale below:

1 Never	2 Rare	3 Seldom	4 Frequent	5 Always

1. Previous TNA conducted in your organization were due to:

▪ introduction of new equipment.	1	2	3	4	5
▪ new / altered organizational objectives.	1	2	3	4	5
▪ new procedures.	1	2	3	4	5
▪ new employees (orientation).	1	2	3	4	5
▪ creation of new jobs.	1	2	3	4	5
▪ compliance with laws and regulations.	1	2	3	4	5
▪ preparation for unexpected changes in the future.	1	2	3	4	5
▪ fulfilment of employees' developmental needs.	1	2	3	4	5
▪ employees' current performance deficiencies.	1	2	3	4	5
▪ other reasons (please state)	1	2	3	4	5

2. Types of training provided by your organization were:

▪ technical	1	2	3	4	5
▪ compulsory	1	2	3	4	5
▪ orientation (induction)	1	2	3	4	5
▪ developmental	1	2	3	4	5
▪ soft skill	1	2	3	4	5
▪ refresher	1	2	3	4	5
▪ qualifying (eg. for promotional purpose)	1	2	3	4	5
▪ remedial (to correct performance discrepancies)	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

SECTION D : SELECTION OF TRAINING & PARTICIPANTS

Please circle using the scale below to indicate the extent to which the following statements describe decisions regarding selection of training and participants in your organization.

1 Never	2 Rare	3 Seldom	4 Frequent	5 Always

1. **The idea to conduct training in your organization was initiated by the:**

▪ CEO	1	2	3	4	5
▪ general manager	1	2	3	4	5
▪ human resource / training manager	1	2	3	4	5
▪ training personnel	1	2	3	4	5
▪ immediate supervisors	1	2	3	4	5
▪ employees themselves	1	2	3	4	5
▪ external consultants	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

2. **Common ways for selecting employees for training in your organization were:**

▪ suggestion in performance appraisal forms	1	2	3	4	5
▪ employees applied to attend	1	2	3	4	5
▪ based on a turn-taking system	1	2	3	4	5
▪ employees were directed to attend by superiors	1	2	3	4	5
▪ discussion and nomination with / by supervisors	1	2	3	4	5
▪ employees were chosen by their colleagues to represent their departments	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

1 Never	2 Rare	3 Seldom	4 Frequent	5 Always

3. **Recommendations about who should attend training in your organization came from the:**

▪ CEO	1	2	3	4	5
▪ general manager	1	2	3	4	5
▪ human resource / training manager	1	2	3	4	5
▪ training personnel	1	2	3	4	5
▪ immediate supervisors	1	2	3	4	5
▪ participants (self-nomination)	1	2	3	4	5
▪ employees' colleagues / peers	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

4. **The factors your organization considered in selecting participants were:**

▪ seniority	1	2	3	4	5
▪ position	1	2	3	4	5
▪ participants' willingness	1	2	3	4	5
▪ boss / supervisor's views and approval	1	2	3	4	5
▪ level of performance	1	2	3	4	5
▪ academic qualification	1	2	3	4	5
▪ length of service	1	2	3	4	5
▪ participants' preference	1	2	3	4	5
▪ availability	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

5. **Priority as candidates for training according to job categories in your organization were:**

▪ Professional	1	2	3	4	5
▪ Management	1	2	3	4	5
▪ Supervisory	1	2	3	4	5
▪ Clerical	1	2	3	4	5
▪ Lower level management	1	2	3	4	5

SECTION E : DATA COLLECTION METHODS

Please circle using the scale below to indicate the extent to which the following describe how TNA data is gathered in your organization.

1 Never	2 Rare	3 Seldom	4 Frequent	5 Always

1. **Methods used to gather TNA data in your organization were:**

▪ on-site observations	1	2	3	4	5
▪ questionnaire surveys	1	2	3	4	5
▪ individual interviews	1	2	3	4	5
▪ performance appraisal forms	1	2	3	4	5
▪ focus groups	1	2	3	4	5
▪ document reviews / examinations	1	2	3	4	5
▪ delphi method	1	2	3	4	5
▪ brainstorming	1	2	3	4	5
▪ assessment centers	1	2	3	4	5
▪ advisory committees	1	2	3	4	5
▪ skills, knowledge and abilities (SKAs) tests	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

2. **Criteria that your organization considered for selecting TNA data collection methods were:**

▪ top management preference	1	2	3	4	5
▪ employees' acceptance	1	2	3	4	5
▪ ease of use	1	2	3	4	5
▪ cost-effectiveness	1	2	3	4	5
▪ organizational culture and values	1	2	3	4	5
▪ time required	1	2	3	4	5
▪ facilities available	1	2	3	4	5
▪ degree of reliability and validity required	1	2	3	4	5

1 Never	2 Rare	3 Seldom	4 Frequent	5 Always

Criteria that your organization considered for selecting TNA data collection methods were: (contd.)

- confidentiality 1 2 3 4 5
- desired outcomes 1 2 3 4 5
- persons to be involved 1 2 3 4 5
- availability and expertise of HR staff 1 2 3 4 5
- sample size 1 2 3 4 5
- other (please state) 1 2 3 4 5

3. **Data sources that your organization referred to in TNA activities were:**

a) Organizational level

- organizational goals and objectives 1 2 3 4 5
- manpower inventory 1 2 3 4 5
- skills inventory 1 2 3 4 5
- management request / mandate 1 2 3 4 5
- competitor's training practices 1 2 3 4 5
- current trends in industry 1 2 3 4 5
- changes in system or sub-system 1 2 3 4 5
- organizational climate indices (eg. turnover, absenteeism, accidents, etc.) 1 2 3 4 5
- analysis of efficiency indices (eg. product quality, customer complaints) 1 2 3 4 5
- other (please state) 1 2 3 4 5

b) Operational level

- job descriptions 1 2 3 4 5
- job specifications 1 2 3 4 5
- performance standards 1 2 3 4 5
- relevant literature concerning the job 1 2 3 4 5
- other (please state) 1 2 3 4 5

1 Never	2 Rare	3 Seldom	4 Frequent	5 Always

Data sources that your organization referred to in TNA activities were: (contd.)

c) Individual level

▪ performance appraisal data	1	2	3	4	5
▪ skills, knowledge and abilities (SKAs) tests results	1	2	3	4	5
▪ attitude surveys	1	2	3	4	5
▪ assessment centers	1	2	3	4	5
▪ supervisor's suggestions	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

4. **Techniques that your organization used to analyze training needs were:**

a) Organizational level

▪ organizational scanning	1	2	3	4	5
▪ balanced scorecard	1	2	3	4	5
▪ Strengths, Weaknesses, Opportunities, Treats (SWOT) analysis	1	2	3	4	5
▪ Political. Environmental, Sociological, Technological (PEST) analysis	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

b) Operational level

▪ task/ knowledge, skills, abilities (KSA) analysis	1	2	3	4	5
▪ job analysis	1	2	3	4	5
▪ competency analysis	1	2	3	4	5
▪ skills inventory	1	2	3	4	5
▪ managerial skills audit	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

1 Never	2 Rare	3 Seldom	4 Frequent	5 Always

Techniques that your organization used to analyze training needs were: (contd.)

c) Individual Level

▪ performance review / appraisal	1	2	3	4	5
▪ repertory grid analysis	1	2	3	4	5
▪ versatility chart / analysis	1	2	3	4	5
▪ diary analysis	1	2	3	4	5
▪ critical incident	1	2	3	4	5
▪ other (please state)	1	2	3	4	5

SECTION F : PERCEPTIONS ON TNA PRACTICE

Please circle using the scale below to describe your overall perceptions regarding your organizational TNA practices.

1 Strongly disagree	2 Disagree	3 Slightly disagree	4 Slightly agree	5 Agree	6 Strongly agree

1.	TNA stage is emphasized in your organization's training practices to ensure training effectiveness.	**1**	**2**	**3**	**4**	**5**	**6**
2.	Training needs will only be fulfilled if they are in line with your organizational strategic needs.	**1**	**2**	**3**	**4**	**5**	**6**
3.	TNA methods used by your organization produce clear, relevant, specific data on performance discrepancies.	**1**	**2**	**3**	**4**	**5**	**6**
4.	TNA methods used by your organization make it possible to distinguish between training that employees *need* to perform their jobs and training that they *want* but do not need to perform their jobs.	**1**	**2**	**3**	**4**	**5**	**6**
5.	TNA conducted in your organization is able to differentiate performance problems caused by employees' lack of skills, knowledge and abilities (SKAs) and problems caused by other factors.	**1**	**2**	**3**	**4**	**5**	**6**

SECTION G : OTHER INFORMATION

1. In general, please describe any difficulties / problems (if any) that you faced in conducting TNA in your organization.

.....

.....

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.....

THANK YOU FOR YOUR COOPERATION

APPENDIX D

Seven Most Important Criteria in Choosing Data Collection Methods
(Findings of Three Studies)

Rank	Present Research	Elbadri (2001)	Gray, *et al* (1997)
1	Desired outcomes	Relevancy and quantifiable data	Relevant, quantifiable data
2	Organizational culture and values	Incumbent involvement	Acceptance likeliness by senior management, supervisors, line managers, and target employees
3	Cost-effectiveness	Cost	Management and employee participation
4	Persons to be involved	Time	Cost
5	Time required	Ease of use	Availability and expertise of HR staff to administer
6	Degree of reliability and validity	-	Time required
7	Top management preference	-	Ease of use